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ON THE SUDDEN SPONTANEOUS OBSTRUCTION OF THE CANALS OF THE LARGER ARTERIES OF THE BODY; *with some Observations on the process employed by Nature to prevent or arrest Hæmorrhage from lacerated Arteries.* By JOHN W. TURNER, Professor of Surgery to the Royal College of Surgeons, and Consulting Surgeon to the Edinburgh New Town Dispensary.

It has sometimes been observed, that the pulse has suddenly and permanently disappeared in one part of the body, while it has continued distinct in the other parts; and, in some cases of this kind, on examination after death, it has been found, that an obliteration had taken place of a portion of the tube of the artery in which the pulse could not be felt during life. This morbid affection of the arteries appears, till very lately, to have escaped the notice of pathologists, and no full or accurate description of it has as yet been published. I have therefore been induced to attempt to give a connected account of a considerable number of cases of it, which have either fallen under my own observation, or have come to my knowledge as observed by others.

The first instance with which I am acquainted, where this sudden and spontaneous obstruction of the arteries was observed, and its true nature suspected, was in a patient under the care of Dr. Thomson and myself in the year 1814. An account of this case was, soon after its occurrence, communicated to Mr. Hodgson, who published it in the Appendix to his valuable Treatise on the Diseases of the Arteries and Veins. But as it appears to me interesting, from its having been the first of the series, and as it was minutely and carefully observed, I conceive it will not be out of place to repeat some details of it here.

CASE I.—A gentleman, about 40 years of age, of a full habit, was exposed to cold on the 1st of January, 1814. This produced a feeling of chilliness, and occasional alternate cold and hot fits, which continued to increase in frequency and severity. On the 9th, when he first sought professional assistance, he was affected with smart fever, accompanied by bilious symptoms, a slight cough, and feeling of oppression on the chest. Under the use of laxative medicines, spare diet, and confinement to bed, these symptoms speedily abated, and on the 15th he considered himself so well as to get up and leave his bed-room. In consequence of this, he suffered next day a return of his complaints, to which were added a diffused pain over the right side of the chest, with oppressed breathing. He was now bled at the arm, and aperient medicines and diaphoretics were given. The blood was not buffy: the cough abated; and the pain left the breast, but extended down the side, and two days afterwards attacked the right groin near the insertion of the pectineus muscle, shooting down the limb, and particularly affecting the calf of the leg, and sole of the foot. This pain continued violent for two days, and alternated between the groin and the calf of the leg. There was considerable heat in the pained part of the thigh, and the femoral artery was observed to throb very violently in the groin. The fever continued, but was mild; the feelings were easy; the pulse 96; and the surface generally covered in the course of the day with a free perspiration. In about a week a solution of the fever seemed to be taking place, when, after fatigue, he was again attacked by rigours, accompanied with feeling of great depression, and an affection like globus hystericus. This was followed by feverish heat, and an increase in the frequency of the pulse, which ranged from 94 to 112. These symptoms continued without amendment, and the patient became much emaciated and debilitated. On the 11th of February, the pulse suddenly fell to 70, but without relief of the other symptoms. It was weak, and beat twice rapidly in succession after every fifth stroke. With the advice of Dr. Hamilton, who had been consulted, port-wine was given, instead of claret, which he had previously been using to a moderate extent; and, after taking three glasses, the pulse became regular, and more firm. On the 13th he had three copious evacuations from the bowels, of fluid consistence and black colour, not unlike dissolved blood. This was accompanied by very alarming symptoms of sinking. He was affected by a severe rigour, followed by profuse sweating. The pulse became quick, and very feeble. He

complained of extreme langour. The countenance was pale and fallen, and he had lost the recollection of past events.—Wine was freely administered; and, on the 15th, he was better, being collected, and less languid. By the 20th the evacuation from the bowels, which had continued black, had become of a lighter colour; and from this time he gradually continued to improve in strength, and to take his food with appetite.

It is to be remarked, that during this last attack, about the 7th of February, a slightly painful and hard circumscribed swelling was observed on the inner side of the tibia, at the upper part of the calf of the right leg. This swelling disappeared spontaneously in a few days. In the earlier stages of the ailments, the pulsations in the arteries were occasionally observed to be remarkably sudden and throbbing.

On the morning of the 5th of March, after the patient had been for several days so well as to be able to leave his bed-room, and when he appeared gradually convalescent, on raising himself in bed, by resting on the palms of his hands, with his arms stretched behind him, he experienced a sensation as if something had given way at the elbow joint of the right arm. This was immediately followed by numbness of the hand and fore-arm, and a sensation of circumscribed tightness over the fore part of the elbow joint. The hand soon became cold, and, on trying to feel his pulse at the wrist, he was surprised and alarmed to discover that it had entirely ceased. On examination during the day, no pulsation could be detected at the wrist, nor in any part of the fore-arm below the tendinous expansion of the biceps muscle. Above this spot, the pulsation in the humeral artery was strong, and opposite the elbow joint it appeared stronger than in the other arm, but entirely confined to the site of the artery. No tumour or swelling could be perceived; but on feeling the course of the artery between the finger and thumb, immediately above the part where the pulsation ceased, its tube seemed to be rather larger and harder than in the other arm. He complained of pain, of a pricking kind, at the bend of the arm, somewhat increased by pressure. The numbness, paleness, and coldness of the hand continued, and he had a slight tingling feeling in the fore-arm, but the powers of sensation and of motion were not impaired. In the evening the pain had increased, and extended along the fore-arm; and the pulsation opposite the elbow joint had diminished in strength, being now not so strong as in the other arm. A very feeble pulsation could be observed in the radial artery at the wrist, and the hand, which was covered with flannel, had became warmer. On compressing the fore-arm, the veins in the back of the hand and wrist were seen to fill slowly.

On the 6th, the parts surrounding the artery at the elbow were less lax, and a slight hardness was felt along the inner edge of the tendon of the biceps muscle. The pain was more severe on pressure and motion, and extended, in the course of the artery, one inch above the point where the pulsation ceased, and two inches downwards on the radial side of the fore-arm. The numbness had considerably abated, and the pulse could be felt at the wrist very feeble but sufficiently distinct to permit its being counted. The fulness and hardness in the course of the artery, and the pain on pressure, rather increased till next day, when they began to abate, and then very gradually disappeared. The numbness of the hand also went off. The pulsation at the wrist did not increase in strength from the second day of the affection.

While we were anxiously watching the progress of these changes in the arm, the patient was attacked by a similar morbid affection in the right leg. On the 9th March, five days after the stoppage of the pulse in the arm, about midnight, in moving his right leg without any great exertion, he experienced suddenly a sensation of numbness and weight, extending from the ham downwards. On examination, in half an hour after, no pulsation could be felt in any of the arteries of the foot, or in the ham. The pulsation of the femoral artery was very strong, and could be felt all along the thigh to the part where the vessel perforates the triceps muscle, but no farther. The foot was cold: no pain was excited by pressure on any part of the limb, but he complained of occasional cramp-like pains in the calf of the leg. The next day pain was excited by pressure on the course of the artery in the lower part of the thigh, where the pulse ceased, and in the ham. Above this the femoral artery beat very strongly, the pulsations in the groin communicating the sensation to the fingers of a pulsating tumour; and a strong pulsation was felt in the abdomen, along the course of the aorta. The pain, occasioned by pressure and motion of the limb, continued to increase in the lower part of the thigh for three days, after which it gradually abated.

The morning after the attack, the foot was pale and cold; and below the ankle the integuments were entirely devoid of sensation, when pressed, pinched, or tickled, and the muscles of the foot seemed to have lost the power of contraction. The next day several mottled purple patches appeared on the instep and fore part of the ankle, which gradually extended over the whole foot, till the surface by the fifth day had become entirely livid. At first, minute branches of veins, full of blood, were intermixed with the purple efflorescence: they could be emptied by pressure, and slowly filled again on the compression being removed. As the discoloration advanced, the foot swelled slightly, and became œdematous, and appeared to acquire an increase of temperature. Soon after the attack, he complained of severe burning pain in the foot, and a feeling as if it were crushed, which continued till near the death of the patient. About the ninth day, the soft parts above the ankle began to swell, and to be hot and painful on pressure: the swelling gradually increased, and extended till it reached the upper part of the calf of

the leg. The integuments above the ankle began to be discoloured on the ninth day, and the discoloration increased till the lividity reached the calf of the leg, and at last rapidly extended nearly to the knee. The soft parts adjoining the discoloured skin were swollen, and very painful on pressure; but no redness appeared, nor any inflammatory line between the dead and living parts. The parts discoloured were completely insensible.

On the seventh day after the attack, several tense globular vesications and bullæ appeared on the foot, some filled with reddish, and others with pellucid serum. They increased in number, and extended above the ankle to the calf of the leg.

When the patient suffered the attack in the leg, he was already much reduced by his previous illness. He afterwards became still weaker, his pulse increased in number, and he had frequent copious sweatings, and occasionally a tendency to faint. After the swelling began to reach the leg, his constitution became more affected; the pulse reached 120. He had great languor, and profuse perspirations. His breathing became laborious, with aggravated paroxysms of dyspnœa, and attacks of cough, with expectoration of mucus tinged of a red colour. His throat also became aphthous. These symptoms continued, the pulse becoming more feeble, till the 27th March, when, while sitting up in bed, he suddenly fell back, and, after two or three deep inspirations, expired, eighteen days after the pulse ceased in the leg, and twenty-two after the arm was first affected.

The state of the body was minutely examined after death, in doing which, we were assisted by the late Dr. Gordon.

The brachial artery was exposed, and traced to the fore part of the elbow, where it was imbedded in a hardened mass, composed of the surrounding cellular membrane, veins and nerves, which adhered firmly to each other, and to the artery. When the last was slit open, it was found to be impervious immediately before dividing into the radial and ulnar branches. At this part its caliber was much contracted, and filled with a cylindrical clot of firm lymph, which extended about a quarter of an inch upwards, from the division of the vessel, and adhered firmly to its internal surface. The orifice of a large branch was situated immediately above the termination of this clot of lymph.

The radial artery was obliterated for nearly an inch and a quarter. Its canal was much contracted, and filled with lymph adhering firmly to its internal surface, and terminating in a delicate conical process, about two lines in length, which projected downwards into the tube of the artery. The obliteration extended only to the commencement of the ulnar artery; the internal coat of which terminated in a distinct edge, which proceeded about half an inch downwards, in an oblique direction from the obliterated part. The coats of the arteries in the obliterated space were hard, thickened, of a whiter colour than natural, and adhered inseparably to the surrounding parts. Above and below, they appeared sound in every respect.

On cutting into the inferior extremity, a considerable effusion of a clear serous fluid was found in the thigh, and upper part of the leg, and the muscles were rather pale. But lower down, where the skin was discoloured, the muscles were of a dark colour, very flaccid, and easily torn; and in the course of the incisions, copious coagula of black blood were brought in view. On tracing the vessels, considerable hardness and adhesions were found, where the femoral artery perforates the tendon of the triceps muscle, and in the upper part of the ham. When the artery was slit open, an ovoid sac was found in its course, immediately after the vessel passed through the tendon of the triceps. This sac contained a hard solid substance, resembling lymph, of the size and shape of a nutmeg. The surface of this coagulum was covered with a thick, grayish coloured fluid, resembling pus. The coagulum was unconnected with the containing sac, except at its upper extremity, where it adhered very firmly. Immediately above this sac, the tube of the artery was obliterated to the extent of half an inch. Its coats were much thickened, and its parites were in contact, and adhered to each other. From the obliterated portion, a large conical coagulum extended up the vessel for three inches. To the distance of more than an inch and a half below the sac, the coats of the artery were thickened, and its canal was filled with a very firm coagulum of lymph, which adhered strongly to its internal surface, and sent a strong conical process, half an inch in length, downwards. The sac appeared to consist of several layers. The inner of these arose from the coats of the artery, but no appearance of the internal coat of the artery, or of circular fibres, could be observed. At the attachment of the sac to the inferior portion of the artery, the internal coats of the vessel terminated in a ragged margin. The inner layer of the sac appeared to be composed of the dilated external coat of the artery, and the other layers to be formed by the surrounding cellular substance.

Beyond the lower obliteration, the popliteal artery was pervious, and empty, for the extent of about two inches; it appeared sound in every respect, except in there being a small crucial fissure, or laceration of the internal coats, opposite to the origin of a large branch, which arose from this portion of the vessel. Below this part, the artery was again obliterated, to the extent of an inch and a half, by lymph effused into its cavity, and adhering to its parietes, though not so firmly as in the obliterated portions already described. This closed portion terminated in a thin sac, which would contain a small bean, filled with a fluid resembling pus, and similar to that found in the sac of the femoral artery. The sac was easily torn; its internal surface was ragged, and of a white colour, and it was connected with the artery both at its upper and lower part. The origin of the anterior tibial artery

was attached to the middle of its parietes, and the coats of this vessel were so much thickened, that its canal was nearly obliterated. Below the sac the posterior tibial artery was filled with lymph for nearly two inches; the lymph adhered to the vessel, and terminated in a conical clot, where the peroneal artery is given off. The internal coat of both the inferior and superior portions of the artery were observed to terminate abruptly at the commencement of the sac. The plugs of lymph found in the four obliterated portions of the artery, terminated opposite to the origin of branches from its trunk. The peroneal artery was in a natural state for a short space, but its coats suddenly became hard and thickened, and its canal almost closed. Beyond this point, its internal surface was of a dark purple colour, and the coats of the vessel had lost their elasticity, marking the place to which the gangrene had extended. The femoral vein adhered to the femoral artery, opposite to the dilated part of the latter. The coats of the vein in this situation were thickened, and its diameter somewhat diminished. Below this part, its cavity was, in several places, filled with coagula of blood. The femoral artery above the first closure was healthy, as were also portions of the aorta which were examined. The brain was sound, having only a slight serous effusion on its surface. The abdomen was examined, but no diseased appearances were discovered. There was an effusion of about ten ounces of bloody serum in the left side of the thorax, and about one-half that quantity of pellucid serum in the right side. The lungs were healthy; the heart was of large dimensions, but its structure was natural.

I have been induced to detail the above case at considerable length, as it appears to me interesting, not only on account of the singular affection of the trunks of the arteries, but also as illustrating the effects of the sudden cessation of the circulation in the extreme parts of the body. Thus it was observed, that the obstruction to the supply of blood to the leg produced important effects on the functions of the nerves of the foot; for it was ascertained very soon after, that the skin of the foot was insensible, and apparently the muscles had lost their power of contracting; at the same time a burning pain, and feeling as if crushed, were induced in the foot. It is not easy to ascribe these effects to any thing else but to the deficient supply of blood to the branches and extremities of the nerves, for the trunk of the nerve was undisturbed and uninjured. The progress and appearances of mortification from sudden deficient circulation, were well exhibited, and minutely noticed. They seem to confirm the opinion, that, even in mortification from deficient circulation, a certain degree of reaction or inflammation precedes the complete death of the part, as was shown by the vascular congestion, the swelling, the increase of heat, and the tense vesications which took place on the foot and leg. They also support the very graphic description which has been given by Mr. Guthrie of gangrene from injuries of the main trunks of the arteries of the extremities.* The commencement of the disease in the extreme part of the limb, the increase in its rapidity, and the more acute and inflammatory character of the gangrene, after it reached the lower part of the leg, were very distinctly marked.

Case II.—The next case I have to notice is that of a gentleman, 52 years of age, who was under the care of my friend Mr. W. Wood, and who was visited during his illness by Dr. Thomson and Dr. Abercrombie. He was first taken ill in January, 1821. His complaints were not of a very defined character, nor did the symptoms indicate much danger, except from their continuance. He became weak and emaciated, with quickened pulse and occasional feverish feelings, and sometimes complained of a slight transient uneasiness across the epigastric region. Although he was able to take a good deal of food, these symptoms continued, and at last he was attacked with diarrhœa, three days after which he died, on the 5th of July of the same year.

A few weeks before his death, while turning his hand behind his back, to put it in his coat-pocket, he experienced a sudden acute pain at the bend of the elbow joint, and a sensation of numbness in the hand and fore-arm. On examination, a slight hardness was felt in the fore part of the elbow joint, which was painful on pressure. No pulsation could be felt in any of the arteries of the fore-arm, but in the humeral artery the pulsation was natural as far as the elbow joint. In a few days the pulse could be again felt in the fore-arm; and after a few days more, a similar accident occurred, in the same manner, but the pulsation in the fore-arm never returned. The pain at the elbow gradually abated.

On examining the body after death, a considerable abscess was found in the spleen. On inspecting the arm, the humeral artery, about half an inch above its division into the radial and ulnar branches, was found firmly adhering to the surrounding cellular substance, which was indurated. On slitting open its tube, the artery was found contracted, and completely obliterated at this part, the internal parietes adhering firmly together. The outer coat of the artery seemed incorporated with the surrounding parts. Immediately below the obliteration, the inner coats appeared to terminate in an abrupt edge, and they could also be seen terminating in a distinct margin at the upper part. Above the obliteration, the vessel contained a firm coagulum of lymph.

I have given the account of this case chiefly from a statement of it published by Dr. Abercrombie, in a paper on Diseases of the Spleen,† and partly from information afforded me by Mr. Wood, and by my own examination of the artery after death.

When the stoppage of the circulation in the

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* See a Treatise on Gun-shot Wounds, &c. 2d Edition. p. 129.

† Edinburgh Medical and Surgical Journal, vol. xxii. p. 4.

arm, in the case first related, took place, it naturally excited speculations as to the cause of so singular an occurrence. The idea immediately suggested itself to Dr. Thomson, that the obstruction was produced in the same manner as hæmorrhage is sometimes prevented in arteries which have been torn across, and, as he believed, obstruction of the arteries had been occasioned, in some cases of gun-shot wounds which he had observed, where the ball had passed close to the trunk of an artery without dividing it; viz. by the laceration of the internal coats of the vessel, and the projection of their edges and flaps into its tube, by which an obstruction is immediately produced to the passage of the blood, the detained portion of this fluid coagulates, and afterwards the vessel is obliterated by the adhesive inflammation excited in the site of the lacerations.

It is well known that lacerated wounds bleed less than incised wounds of the same parts; and it has also been shown, by numerous cases, that, even where large arteries are ruptured, the hæmorrhage ceases more readily than in such arteries when cut; and, in some cases, where even the largest arterial trunks of the limbs have been torn across, no bleeding, or only a very slight one, has occurred. There are various instances in the records of surgery, of limbs torn off near to the trunk of the body, which established these facts. Among these, perhaps, the most remarkable are the well known case recorded in the Philosophical Transactions, of the young man who recovered after his arm, along with the scapula, had been torn away by the wheel of a mill, and in whom the bleeding speedily ceased, and did not recur, although no means were taken to obstruct the artery;* and one which occurred to Mr. Carter, a surgeon at Kettle, in which the thigh of a boy was torn off at the groin by the wheel of a slitting mill, and in which no bleeding took place during four days that the patient survived the injury.† There are numerous other cases of the same kind, to which I consider it unnecessary particularly to refer; but I may remark, that no satisfactory explanation is given in the accounts of any of them, of the cause of the absence of the bleeding.

When an artery is torn across, the edges of the division of the coats is irregular, and the vessel has a tendency to retract into the cellular substance, which also is divided with a ragged surface. The blood will thus flow less freely, and will be more entangled in its passage from the orifice of the vessel, than in an artery cut across, and a greater tendency in the blood to coagulate be thus produced, which is known to be one of the means by which nature opposes an obstruction to the flow of blood from the orifice of a vessel, when hæmorrhage spontaneously ceases. This effect will be still more certainly produced, if the artery has given way within its sheath, at some distance nearer the heart, than the surface of the wound, and a portion of its tube has been drawn out, as has occurred in some of the cases of limbs torn off, which have been recorded. But these circumstances are obviously by no means sufficient to account for the very slight bleeding, or the total absence of it, in cases where the large trunks of the arteries of the limbs have been divided by laceration. Indeed, we know, that, in many cases, profuse, and even fatal hæmorrhage has taken place from torn arteries, or those divided in contused wounds, both in accidents in the human body, and in experiments on the lower animals.

From conversations with Dr. Thomson, and from his lectures, I have learnt, that, when he began to give lectures on surgery, his attention was particularly directed to the subject of hæmorrhage, and to the means by which nature obstructs the flow of blood from arteries, in cases in which the bleeding spontaneously ceases, or does not take place; of which, those where limbs had been torn off without bleeding, or with only a slight degree of it, especially attracted his notice. He made various experiments on the effect of violence on the arteries in the dead body. He was aware of the fact which had been long ascertained, that the internal coats of the arteries are less extensible and more friable than the external coat. He found, that if an artery be forcibly elongated, the internal coats first give way, the external continuing to stretch. He also found, as had been ascertained by the experiments of Nichols, that if an artery be violently distended by a fluid thrown into it, the internal coats are lacerated, the external coat remaining entire; and he confirmed the observation made by Desault, illustrating the same fact, that, on tying an artery firmly with a ligature, the internal coats are cut through in the course of the thread, while the external remains undivided. When the inner coats were lacerated, and fluid injected into an artery, he remarked, that they were separated from the external coat; and, projecting into the canal of the artery, obstructed the flow of the fluid through it; and that, if the fluid was continued to be propelled, it insinuated itself under the torn portions of the inner coats, and dilated the external tunic in the portions of the artery nearer to the syringe than the site of the detached flaps.

About this time, a case occurred to Dr. Thomson, of a lacerated wound of the hand in a young man, in which the soft parts between the metacarpal bone of the thumb and of the fore-finger were torn asunder by the bursting of a pistol. A considerable portion of the radial artery hung out from the wound on the back of the hand, with an open mouth, yet no blood flowed from it, though the pulse was distinct at the wrist. These circumstances convinced Dr. Thomson that the obstruction to the hæmorrhage must have been produced by some change within the tube of the vessel itself; and he conjectured, that it was by the laceration of the internal coats, which he had

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* Philosophical Transactions, vol. xl. p. 313.
† Medical Facts and Observations, vol. i. p. 17.

often produced in the dead body on the forcible elongation of arteries; and which he had found to prevent the flow of fluids through them, when thrown into them by a syringe.

This conjecture, though sufficiently probable, was not verified by any observation on living animals, until the period of the investigations undertaken by the late Dr. Jones, at the suggestion of Dr. Thomson; the important results of which were published by Dr. Jones, in his well-known valuable work, entitled "A Treatise on the process employed by Nature in suppressing Hæmorrhage from divided and punctured Arteries."

Dr. Jones, in this work, has not particularly directed the attention of pathologists to the effect of the division of the internal coats in arresting hæmorrhage from lacerated arteries, although the fact is very distinctly marked in the relation of one of his experiments. The carotid artery of a horse was divided by a sudden and violent pull of a director passed under it. The upper part of the artery retracted, whilst the other hung out of the wound three inches. The hæmorrhage was considerable from the former, and would have been profuse from the later, but was prevented by making a ligature on it. The wound was closed, and the bleeding from the upper portion soon stopped: the animal was killed eighteen hours after the operation. On examination, the external coagulum was formed, as usual, in the canal of the sheath. To it adhered a long black coagulum, filling four inches of the canal of the artery. This was the internal coagulum, and purely of blood, yet it adhered to the artery in very many parts. To account for this unusual appearance, the artery was examined. Its internal coat had been lacerated in numberless parts, and at every laceration there had been an effusion of lymph, to which the internal coagulum adhered. In this instance, Dr. Jones adds, contrary to all preceding and subsequent experiments, "the internal coagulum seems to have had some share in the security against hæmorrhage, but only in consequence of the injury done to the internal coats of the artery."*

The influence of the injury of the internal coats of a lacerated artery in preventing bleeding, were particularly pointed out by Dr. Thomson, in his Surgical Lectures; and, in his work on Inflammation, he states, in treating of wounds of arteries, "If, lastly, an artery, instead of being divided with a cutting instrument, be torn asunder, a very inconsiderable quantity of blood will in general be lost. The inner surface of the ruptured artery will be found torn in various places, contracted, and containing coagula of blood. This is a state of arteries which has been first accurately ascertained by Dr. Jones, in his Experimental Investigations."† This explanation of the absence of hæmorrhage in certain cases of ruptured arteries, I believe to have been new; and I do not find it mentioned in various systematic works on surgery, published since it was proposed. The late Professor Beclard of Paris, whose premature death must be regarded as a serious loss to the progress of the science of medicine, is the only author with whose works I am acquainted, who has adopted a similar view of the subject. In his work, entitled, "Additions à l'Anatomie Générale de X. Bichat," published in 1821, in speaking of the wounds of arteries by laceration, he says: "J'en ai rassemblé un certain nombre d'observations prises dans les auteurs; la plus remarquable est celle de Samuel Wood, rapportée dans les Transactions Philosophiques, et depuis dans divers ouvrages. Dans quelques-unes de ces observations, la mort a été la suite d'une hémorrhagie abondante; mais dans le plus grand nombre, comme aussi dans les expériences que j'ai faites sur les animaux, la guérison a eu lieu. Outre la rétraction et la resserrement indiqués par Bichat (page 310,) deux causes s'opposent encore dans ce cas à l'écoulement du sang et favorisent l'oblitération de l'artère. En effet, à l'instant même de l'accident, celle-ci cède et s'allonge avant de se rompre; mais les membranes internes, moins extensibles, se déchirent d'abord inégalement et en divers endroits, puis se séparent complètement, tandis que la tunique celluleuse continue à s'allonger, en se rapprochant de plus en plus de l'axe du vaisseau, comme le fait un tube de verre fondu qu'on tire par les deux bouts. Quand la séparation est achevée, l'artère offre donc à son extrémité un prolongement conique, terminé par une ouverture étroite, et dans son intèrieur des lambeaux irréguliers qui en obstruent la cavité. Cette dernière circonstance paroît la plus importante des trois, car, 1°, la rétraction manque souvent, le bout de l'artère est pendant, sans qu'il y ait pour cela d'hémorrhagie; 2°, en coupant sur un animal le sommet de l'espèce de cône que représente l'artère, on ne ronouvelle l'écoulement du sang qu'autant que la section est pratiquée au-dessus des déchirures intérieures."* Beclard, in his Anatomie Générale, published in 1823, in speaking of the cessation of bleeding from arteries torn across, also states: "On a attribué cette cessation prompte et définitive de l'hémorrhagie, qui a presque toujours lieu dans ce cas, à la retraction de l'artère, et à d'autres causes imaginaires: beaucoup de cas observés dans l'èspece humaine, et beaucoup d'expériences fait sur les animaux, m'ont convaincu que c'était aux ruptures intérieures plus ou moins multipliées qu' éprouve l'artère avant de se deviser totalement en un point, qu'il fallait attribuer ce phênomène remarquable. Les phénomenes consecutifs sont les memes qu'après la section transversale."† Whether Beclard was led entirely to the observation of these phenomena from his own experiments, he does not mention;

* On the Process employed by Nature in suppressing Hæmorrhage, &c. p. 42.
† Lectures on Inflammation, p. 512. 1813.

* Additions, &c. p. 95.
† Elemens d'Anatomie Generale, p. 384.

but he does not refer to any other authority. The works of Dr. Jones and of Dr. Thomson were given to the world long before his were published; and I know that the preparations of the obstructed arteries of the first case I have related, preserved in the Museum of the College of Surgeons, were shown, and their pathology explained to him, several years before the appearance of his works, from which I have made the foregoing extracts.

There are but few cases recorded, in which the state of the arteries torn across has been ascertained by examination, in the human body. Besides those mentioned generally by Beclard, I shall shortly notice some, which illustrate the subject, and appear to me to confirm sufficiently the explanation I have stated, of the absence or speedy cessation of hæmorrhage from vessels in such circumstances.

The first which I shall relate, is one which occurred in the Royal Infirmary here in the year 1811, under the care of my friend Mr. Newbigging, the particulars of which have been kindly communicated to me by Mr. George White, who was then his clerk.

William Elliot, aged 18, was brought into the hospital on the 29th March, at the hour of visit, having about two hours before got the right arm and left thumb shockingly mangled by the rollers of a lint mill. The axillary artery, which was exposed, had been ruptured about three inches below the axilla, and a coagulum of blood, of about three-fourths of an inch in length, had been formed in the proximal extremity of the vessel. The axillary plexus of nerves was as bare as if it had been dissected. The parts around the shoulder joint, and below the clavicle, were quite undermined. Amputation, a little below the joint, was immediately performed by Mr. Newbigging, who removed the arm, so as to get a flap from the tattered integuments to cover the bone, which was sawn about two inches below the joint, removing only the ragged extremity where it was fractured. The axillary artery was tried a little above the coagulum. Three other arteries were also secured by ligature. As there was a considerable oozing of blood from the end of the bone, a dossil of lint was applied to it. The stump was then dressed in the usual way. Sloughing took place of the lacerated soft parts, and of a portion of the neighbouring integuments, after which the wound granulated. In the progress of the case, abscesses formed over the sternum, a small portion of bone exfoliated, and the patient became affected with diarrhœa and sweating, and the granulations unhealthy and indolent, so that the progress of the cure was slow. In July, his general health had improved, but the sore was still unhealed, and, as his residence in the hospital was thought to retard his recovery, he was advised to go into the country. The sore afterwards completely healed. Mr. White had, a few weeks ago, the pleasure of accidentally meeting his patient in good health.

Mr. White examined carefully the amputated arm. On tracing the humeral artery, it was observed to be swollen out at several places into little knots, between which it appeared contracted; and, on slitting it up, it was found that this appearance was produced by the internal coats having been lacerated at various parts and coiled up within the external coat which remained entire, so as completely to obstruct the canal of the artery. In the description of the case I have given, which is that drawn up by Mr. White, when the man was received into the hospital, it is stated, that a coagulum of blood had been formed in the torn axillary artery, about three-fourths of an inch in length. Mr. White has since mentioned to me more particularly the appearances that presented themselves. Immediately above the torn orifice of the artery, from which no blood flowed, it appeared swollen out into a bulb. This enlargement exactly resembled those he found in examining the humeral artery. No opportunity was afforded of examining the state of the portion of the artery above, as, after the ligature was applied beyond it, it was left attached to the stump; but Mr. White has no doubt that the knot on its extremity was produced in the same manner as those in the course of the humeral artery.

The next case I have to mention is one which occurred to Mr. Lizars, and has been published by him as illustrating the manner in which nature stems the bleeding of a great vessel. It is that of a gentleman, who, in the overturn of a mail-coach, was thrown from the top, had his leg entangled under the iron-rail, and was dragged with his limb in this position for a short distance. The leg was dreadfully shattered, and the ham exposed to the bone, exhibiting the nerves, blood-vessels and muscles, as if they had been displayed for demonstration. The popliteal artery felt like a cord, had no pulsation, and the leg below was cold and lifeless. Amputation above the knee was performed about six hours after the injury, and the patient recovered. Previously to examining the amputated limb, Mr. Lizars attempted to inject the popliteal artery, but little or no injection entered. On examining the arteries, the anterior tibial, the posterior tibial, and fibular branches, were found empty and collapsed. The popliteal artery was then laid open, when, at one part, the serous and muscular coats were seen ruptured across, a portion of them insulated and plugging up the vessel; and, above this, a clot of blood in the artery, and blood effused under the cellular coat, which had remained comparatively sound and entire. Mr. Lizars has accompanied his description by a delineation of the artery, which illustrates very distinctly the state of its coats.*

This case proves very satisfactorily the effect of the violent elongation of an artery in the living human body, in producing a laceration of the inner coats, while the external coat remains entire; and also the complete me-

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* Edinburg Medical and Surgical Journal, vol. xix. p. 365.

chanical obstruction of the canal of the artery which is produced by this.

Another case, to which I may refer, is one which occurred to a Dr. Mudie of Montrose, so long ago as the year 1761, and published under the title of an Amputation of the Arm without Hæmorrhage,—an occurrence which appeared to the author extraordinary and not easily explicable.

A vigorous woman, thirty years of age, had her hand caught in the machinery of a lint-mill, and her fore-arm and arm drawn into the mashing machines. By this the fingers and hand were severely crushed, and several of the bones of both broken, the ligaments at the wrist torn away, the radial artery divided at the place where the pulse is felt, the fore-arm and arm very much contused, particularly at their articulations, and the os humeri broken within 2½ inches of its upper end. Amputation was performed immediately above the fracture of the humerus. On slackening the tourniquet no blood squirted from the brachial artery, nor could any pulsation be observed at its extremity; and although no ligature, compression or styptic was applied to it, no bleeding took place during the cure.*

In this case there was nothing in the state of the orifice of the artery or surrounding parts to prevent the flow of blood, for they were fairly cut across by incision; and I can have no doubt that the hæmorrhage was prevented by laceration and coiling up of the inner coats of the artery having been produced above the part where it was divided, by the violent elongation and contusion to which this vessel had been subjected.

Dr. Thomson had an opportunity of seeing some cases which appeared to confirm the opinion he had formed, in instances of cannon-shot wounds which occurred at the battle of Waterloo. In a dissection which he saw made by Deputy-Inspector Guthrie, of a limb cut off above the knee for mortification, in consequence of a contusion by a cannon-ball on the posterior part of the leg, the tibial and peroneal arteries had been torn across, and about two inches above this the popliteal artery was found closed in the lower part of the ham by coagulable lymph, which seemed to have proceeded from a rupture of the internal coat of the artery.

In another case, that of a man whose leg had been shot off by a cannon-ball, it was remarked, on amputating his limb above the knee, that the arteries of the thigh did not bleed, nor did any of them afterwards require to be tied.

A case similiar to this also presented itself, in which the arm had been shot away close to the shoulder-joint.†

In the two cases of sudden spontaneous obstruction of the trunks of the arteries which I have related, the appearances in dissection seemed to verify the conjecture formed by Dr. Thomson, as to the cause of that phenomenon; but, in both, from the interval which had elapsed between the occurrence of the accident and the death of the patients, and from the parts having been consequently altered and matted together, by the inflammation which had been produced, it was impossible to determine exactly what had been their original state when the cessation of the pulse took place. This, however, was satisfactorily ascertained in the following case that occurred to Dr. Abercrombie, which he some time ago pointed out to the notice of the Society. He has obligingly furnished me with notes of it, and I feel greatly indebted to him for permitting me to insert it here, as, in my opinion, it adds very materially to the value of the series of observations on the subject of which I am treating.

Case III.—John Anderson, aged sixty-three, of regular and sober habits, and enjoying good health, was, in October 1819, much exposed to cold, after which, about the end of the month, he was affected with pain in his head and back, accompanied by shivering, but was not confined to the house. About the 6th of November he complained of a fixed pain about the top of the right thigh and groin, and after a day or two the thigh became numbed and weak, the muscular power of it being considerably impaired. On the evening of the 11th he observed swelling of the leg, first at the ankle. On the 12th the limb was swelled throughout, and was emphysematous, crackling when handled at every part. When punctured, it discharged a fetid gas, and some dark-coloured fluid. The colour of the skin was at first little changed, or rather red, but towards night it began to be livid in many places, and large vesications appeared upon its surface. He died early on the morning of the 13th, having sunk gradually, but rapidly.

On examination of the body after death, there was found a great quantity of a dark-coloured fluid effused into the limb, and the muscles universally dark and gangrenous; and behind the peritoneum, on the right side of the abdomen, there was a large gangrenous cavity, containing much dark-coloured fluid, and ill-conditioned pus. The femoral artery being laid open, there was found disease in several places of the inner coats. These were soft, and separated at various points from the outer coat, so as to lie across the area of the vessel-like valves. One of them was about a third down the thigh, and there were others less remarkable. On slitting open the external iliac artery, the inner coats were found soft and thick, and at one place completely lacerated in the whole circumference of the artery, and separated from the external coat for nearly an inch and a half, the portion thus separated having fallen down and coiled up, so as completely to obstruct the canal of the artery nearly at the place where it passes under Poupart's ligament. Between this and the origin of the internal iliac artery, there were considerable lacerations of the inner coats. In

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* Essays and Observations, Physical and Literary, vol. iii. p. 502.

† Report of Observations made in the British Military Hospitals in Belgium, &c. p. 23.

two places they were slightly detached from the outer coat, and their edges projected into the tube of the vessel. Above the obstruction at the lower part of the iliac, produced by the more extensive laceration, there was a coagulum of blood in the artery. The aorta was in several places diseased; its internal surface ulcerated, and the inner coat partially separated. In some of the smaller branches of the arteries in the pelvis there was ossification, but none in the right iliac artery, where this singular disease was situated. The left iliac artery appeared sound. No other diseased appearances were detected.

In this case death took place so rapidly, that the inflammation had not time to alter materially the appearances of the parts; and in it, it is obvious that the obstruction to the circulation was produced by the torn and detached internal coats of the artery.

Besides these three cases of the sudden obstruction of arteries, in which the state of the vessel was ascertained by anatomical examination, I shall now adduce some others, in which an opportunity of examining the parts by dissection has not occurred, but the symptoms and progress of which appear to me clearly to show, that they have been of the same nature as those to which I have already directed the attention of the Society.

Case IV.—On the night of the 4th June 1815, a German, of middle age, a strong muscular man, and old soldier, got very drunk, and fell down a steep stair. I was sent for, and saw him very soon after the accident. I found his right elbow-joint violently sprained, and a great degree of swelling and tension in the soft parts all around it. I could not discover any fracture or dislocation, but the joint appeared to me looser than natural, as if some of the ligaments had been torn. I was surprised, on endeavouring to feel his pulse at the wrist, not to be able to discover any pulsation in the radial artery, and I could not detect any in the ulnar, nor in any part of the arteries of the fore-arm. The pulsation of the humeral artery was distinct, and could be traced to the bend of the elbow. I was enabled to examine the parts very freely, as the intoxication seemed to have rendered the patient quite unconscious of his situation, and insensible to pain. He did not complain, in the least degree, on the parts being handled or moved; and he continued occupied in giving cheers to the health of the king, frequently waving the injured arm round his head; and he remained in this state for a considerable part of the night, when he at last fell asleep. Next morning he was in a very different condition. He suffered severely from the usual symptoms which follow a debauch. He complained, in addition, of soreness in several parts of his body which had been contused; and he had violent pain in the arm, not being able to bear the slightest pressure or motion of the parts. The swelling and tension were rather increased. The absence of pulsation in the arteries continued.

He was, at this time, sent to the Royal Infirmary, where he remained till he recovered. I accidentally was prevented from seeing him there, for more than a fortnight after his admission. At that time under the usual treatment, the swelling and pain of the elbow-joint had almost entirely subsided. On examining the arteries of the fore-arm, I could not discover any distinct pulsation in any of them; and the pulsation in the humeral artery could be distinctly felt to the fore-part of the elbow-joint, where it suddenly ceased. The fore-arm was pale, and the veins much smaller and more collapsed than those in the other arm; and when they were compressed, they filled very slowly. The sensation and motion of the fore-arm and hand were perfect. In a short time he was dismissed from the hospital cured, and I had no opportunity of afterwards seeing him; but I heard that he appeared to have got quite well, and that no defect or inconvenience had been occasioned by the injury.

In this case, there appears to me to be no way of accounting for the cessation of the pulse, except by supposing that it had been produced in the same manner as in the cases I have already related. It is impossible to conceive that the artery had been entirely torn across, as, had this happened, there must have been an extensive effusion of blood into the cellular substance of the arm and fore-arm, of which there were no symptoms; nor can we believe that the pulse was stopped by pressure from the effusion into, and consequent tension of, the parts surrounding the artery. Usually no such effect is produced; and I conceive the stoppage would not have been permanent, but that the pulsation would have returned as the swelling and tension abated, as they began to do very soon after the accident.

Case V.—Mr. Bryant, a surgeon in Edgeware Road, has related a case of obliteration of the external iliac artery, followed by gangrene and mortification of the foot and leg, of which the following is an abstract. The patient was a lady, twenty-eight years of age, who, for five years, had been subject to occasional pains in the region of the pelvis; and, during this period, had also suffered from three or four attacks of gout in the right extremity. Ten months before the attack, now to be described, she had received a very trifling blow in the groin from the basket of a laundress, which was followed by slight temporary pain. She had likewise a little enlargement of the inguinal glands, occasioned by excessive exercise on horseback.

On the 21st January 1822, she was affected with acute pain in the right hypogastric and iliac regions, with quick and full pulse, and other symptoms of inflammatory fever. For these symptoms she was freely bled, and treated antiphlogistically. On the fifth day the pain had ceased in the iliac region, but had attacked the course of the ureter and kidney. By free local bleeding, and other appropriate remedies, this pain also was relieved, and the fever diminished; but she complained of slight uneasiness in the left groin, increased on pressure. On the evening of the 28th, seven days after the commencement of her ailments, while using the hip-bath,

she was suddenly seized with numbness, and coldness of the left extremity, succeeded by severe pain in the calf of the leg. The coldness, and the pain of the leg which extended to the ankle, continued, with great diminution of the sensation of touch. On the fourth day after the attack of numbness, petechial spots appeared on the foot, with total loss of sensation, and the calf of the leg swelled, and became exquisitely sensible. From this time the gangrene of the foot went on, the symptoms resembling very much those which occurred in the first case, related in this Essay, but the affection was more acute in its character; and, after the gangrene passed beyond the ankle, a stop to its progress took place, a separation between the dead and living parts began, the progress of the disease being attended with intense suffering, and great danger. In six weeks after the commencement of the mortification the bones of the leg were exposed, which, in a short time after, were sawn through as close to the soft parts as possible. After this the wound granulated; and, at the last report in July, was healthy, a portion of the fibula being in progress of exfoliation. Very soon after the first attack, it was observed that no pulsation could be felt in the femoral artery; and, on examination after the dead parts were removed, no pulsation could be felt in the artery, as far as the bifurcation of the common iliac, nor could any aneurismal tumour, or other unusual appearance, be traced in its course.*

During her illness, this patient was attended by Mr. Cline, Mr. Brodie and Mr. Clarke, who, it is stated, had never seen a case exactly alike, and who were of opinion, that the obliteration had been produced by injury done to the external iliac artery. There can be little doubt, I conceive, that it has been a case of the same nature as those I have described. It illustrates the fact, that, in mortification from the obstruction of the main trunks of arteries, although the collateral circulation may not be sufficient to nourish and preserve the vitality of the whole limb, yet it may be sufficient to supply a considerable part of it below the place where the vessel is obstructed.

The next case I have to mention is one which occurred to my friend Dr. Gairdner, who observed it very carefully during its progress. Unfortunately, from accidental circumstances, the body of the subject of this case, who died a few months ago, was not examined. Dr. Gairdner intended himself to have laid this case before the Society, but, on learning that I was occupied in preparing a paper on the subject, he was induced kindly to forego his intention, and to permit me to enrich my Essay, by adding it to the others I had collected. I give it in his own words, as communicated to me in the following letter.

Case VI.—"*Dear Sir*,—I take my pen, according to promise, to put you in possession, as far as I am able, of the history of the remarkable case of arterial obstruction, which you once saw with me. The subject of it was by trade a carpenter, and was upwards of thirty-nine years of age in the month of October 1824, at which date this narrative commences. In the course of that month he met with an unfortunate accident. On withdrawing from his work-shop at a late hour, he fell backwards over an outer stair-case,—a height of about twelve feet. He was pretty severely bruised about the ninth and tenth ribs of the left side, and his left humerus was dislocated; he was also very much stunned. With the assistance of Dr. Robert Hamilton, who saw him immediately after the accident, I succeeded, without much difficulty, and without the application of any great degree of force, in reducing the dislocation. The pain in the side next demanded attention, more especially as it became accompanied with cough, difficulty of breathing, and some degree of fever. Several days were consumed in vanquishing these symptoms, by the usual remedies,—venesection, purgatives, and the local application of saturnine lotions; by these the fever and pain were removed, and the cough greatly diminished, though not entirely banished. During the time that he was confined to bed after the fall, the arm which had been dislocated was, of course, carefully tied up, and I always felt his pulse at the opposite wrist; but one day I chanced to put my finger on the wrist of the left side, and discovered, to my great surprise, that there was no pulse to be felt. I examined the whole course of the radial, humeral, axillary, and subclavian arteries, as far as it was possible to trace them with the finger; there was no pulse in any part of these vessels. In the carotids the pulsation was natural, the affected arm was coldish and pale, and the veins on the back of the hand were much less distended than those of the right hand. Desirous that facts so remarkable should be witnessed by others besides myself, I submitted the patient, about this time, to the inspection of Dr. Thomson and of Dr. Robert Hamilton; and both these gentlemen satisfied themselves, by minute examination, of the accuracy of the above statements.

After this accident, my patient was never entirely well; he had been liable to coughs before its occurrence, but after it, he was scarcely ever without some degree of cough, which was accompanied with a little mucous expectoration: he was disturbed occasionally by palpitation at the heart, especially on going up an ascent, and was often obliged to stop short in the middle of a slight acclivity, in consequence of dyspnœa, and indescribable sensation of anxiety in the region of the heart. I never happened to see him on one of these occasions, but I have examined his heart at other times, both by auscultation and otherwise, and I never could detect any defect in its rhythm, or irregularity in its pulsations.

"On the 19th of March 1825, rather more than five months after the accident above mentioned, he sent for me in the evening. I found him much alarmed about what he conceived to be a paralytic affection of his *right* arm, in which he had been suddenly seized with a sen-

* Edinburgh Medical and Surgical Journal, vol. xix. p. 45.

sation of numbness and coldness. On examining the arm, I was immediately struck with the similarity of its appearance to that of the left arm formerly; it was colder than the opposite limb; the veins on the back of the hand were flaccid; a paleness of the skin indicated an imperfect circulation in the cutaneous vessels; and the pulse, as in the former case, was imperceptible at the wrist. The arm was less capable of exertion than usual; its strength was diminished, but its muscles obeyed the will as readily and with as much precision as at other times; and though he complained that he felt as if it were benumbed, yet I ascertained that the sense of touch was sufficiently acute for all useful purposes: there was no pulsation in any part of the arteries of the fore-arm, nor in the lower part of the humeral artery; but the subclavian and axillary arteries were found to pulsate freely. Pulsation was also felt in the very beginning of the humeral artery, but none whatever in the rest of its course. Having ascertained the exact spot where the artery was interrupted, I made, with the point of my finger, a little pressure on it, which gave him a slight sensation of pain; the same degree of pressure applied one finger's breadth higher up, or lower down, produced no feeling of this description. I have therefore no doubt, that, at the obstructed part, there was a disease or laceration of the inner coats of the artery; but, although I questioned my patient most minutely on the subject, I could not discover that any blow or bruise on the part, or any sprain of the arm, or even any unwonted exertion, had preceded those symptoms which had no suddenly alarmed him. The *left* arm had by this time recovered its customary power and warmth; and the colour of the skin, and the degree of distention of the veins were indicative of increased freedom of the circulation. No distinct pulsation could, however, be felt in the great arteries of the limb. A very feeble pulse, indeed, could occasionally, be discovered; but it was so very slight, that I should have had much difficulty in numbering the pulsations of the heart by means of it.

"In the months of April and May, he was much distressed with his pectoral symptoms, and with the palpitations and inability for exertion: he became much better in June, and continued so till the beginning of November. Upon the 10th of that month I was called to him, and found him labouring under severe catarrhal symptoms, fever, cough and dyspnœa, mucous *rale*, and copious viscid expectoration, sometimes a little streaked with blood. In the course of a week, these symptoms increased to an alarming degree; the urine, at the same time, fell short, and the legs became œdematous. It is unnecessary to enter minutely into the circumstances of the treatment; it is sufficient to say that, by moderate evacuations, together with blistering, and the use of diuretics, the symptoms, which at one time seemed almost insurmountable, were gradually overcome, and by the middle of the following month he was enabled to return to his customary occupation.

"On the 8th of April 1826 he had a sudden attack of paralysis of his left side; the muscles of the face were evidently distorted, and those of the left leg were so much paralysed, that he dragged the limb in walking across the floor —there was also, for one or two days, a degree of delirium. All these threatening symptoms, however, disappeared entirely in three or four days, and he enjoyed better health during the rest of last year, though he never became strong or free from his pectoral symptoms.

"In the early part of January last he went on a journey of about 60 miles in very severe weather, notwithstanding the repeated warnings which I had given him of the injury that might arise to his impaired constitution from exposure to cold. In the very night after he arrived at the end of his journey, he was seized with an asthmatic attack, similar to that from which he had suffered in 1825. It was attended from the first with bloody sputum, and the quantity of blood increased rapidly as the disease proceeded. In the course of a few days the dyspnœa increased very much, notwithstanding repeated blistering, and other remedies employed to arrest it; the legs became œdematous, he rapidly lost strength, and died on the 15th of January at Dunkeld, which was the scene of his last illness. Immediately on hearing of the fatal termination of his disease, I wrote to Mr. Fletcher, who had attended him there, requesting him to ascertain the state of the heart and arteries by dissection, and giving him a detailed statement of my reasons for this request. To this letter I received a very polite reply, in which Mr. Fletcher expressed his regret that my communication had arrived too late to be of any service.

"I am very sorry that this important case should be thus left incomplete in its details. I am sensible that this imperfection takes much from its value; but I hope it will appear to you of sufficient interest to deserve a place in the series of cases which you propose to communicate to the Medico-Chirurgical Society. I am, my dear Turner, yours very faithfully,

"John Gairdner.

"18, *Hill Street*, 15*th Feb.* 1827."

To these cases I may add one published by Mr. J. Marshall of Leeds, so far back as the year 1813, as there appears to me every reason to believe, from its history, that it has been of the same nature with those I have described.

Case VII.—An old worn out quarter-master of a ship was attacked by retention of urine, in consequence of stricture. The retention relieved itself after the use of an opiate, a bougie was passed, and the patient passed a tolerably easy night, but on waking in the morning he found the use of the right arm entirely gone. On examination, the fore-arm was found benumbed, cold and stiff, and no pulsation could be perceived in any part of the brachial artery, from the subclavian downwards. On the third day the fingers became livid, and the hand discoloured, and pain ensued in the fore-arm, the lower part of which also became livid. On the 15th day a line of demarcation showed it-

self between the dead and living parts, a little below the elbow, and amputation was then performed above the joint. Although the patient was in a most unpromising state at the time of the operation, the wound healed chiefly by the first intention, and was cicatrized in a month, and he ultimately completely recovered.*

After a careful perusal of three cases, related by Dr. Storrer, in a paper entitled, "An instance of the entire want of Pulsation in the Arteries of Paralytic Limbs," I am disposed to believe that they also are to be regarded as of the same nature as those which have been described.†

Case VIII.—The first of these, which came under Dr. Storrer's own observation, was that of a lady about fifty years of age, who was attacked with fever of a mild kind, which in a few days put on a remittent form, and became attended with marks of determination to the lungs, the symptoms resembling, in a very remarkable degree, those which occurred in Case I. By bleeding and antiphlogistic treatment, these complaints abated, and in the third week of her illness the patient seemed to be gradually improving.

At this period, however, after a disturbed night, she was suddenly affected with what is described as a paralytic affection of the whole left side of the body, but without any corresponding affection of the face or speech, or any disturbance of intellect. This was accompanied by excruciating pain in the shoulder, extending to the elbow, soon followed by violent pains in the calf of the leg and foot. She had some capacity of moving the shoulder, but scarcely any of moving the fore-arm and hand; the thigh and leg were in the paralytic state, possessing a very obscure degree of sensation and motion, and the foot and hand were insensible even to the prick of a needle. No pulsation could be felt in the fore-arm or arm, but the subclavian artery was observed to beat distinctly; and Dr. Storrer was unable to perceive any trace of pulsation in the groin or in the ham. During the ensuing four days, the powers of sensation and motion in both extremities were gradually very considerably restored. The pulse did not return, and it diminished in force, so as hardly to be perceptible in the portion of the subclavian artery, in which it was at first distinct. On the fifth day she became affected with uneasy feelings, and attacks of suffocating sensations in her chest, with hurried respiration, and died suddenly during the night. Unfortunately an examination of the body after death was not permitted.

Dr. Storrer regarded this case as one of hemiplegia, but was much at a loss to account for the absence of pulsation in the arteries. He conceived that this could not depend on obstruction in their tubes, from the improbability of this occurring in both limbs, and from the absence of any external marks of the cause of such obstruction, and also from the gradual cessation of the pulse in the subclavian artery; and he suggests the hypothesis that it might depend on a palsy having been produced in the coats of the arteries, which he states would completely explain all the phenomena.

Now, even supposing that the coats of the arteries were paralysed, it appears to me that this would not give rise to a cessation of the pulse, for the blood would be still propelled into the pervious arteries, and would have an impulse communicated to it on each contraction of the heart. I can have no doubt that, in this case, a sudden obstruction had taken place in the arterial tubes in the axilla, and above the groin; and that the paralytic symptoms were the consequence, and not the cause, of the interruption of the circulation. This supposition seems consistent with all the symptoms; and would also explain the disappearance of the pulse in the subclavain artery; for a coagulum might be expected to extend into it, to the first collateral branch above an obliteration of the artery at the upper part of the axilla.

Dr. Storrer next relates a case, which was communicated to him by Mr. Vickers, surgeon at Loughborough.

Case IX.—In a man about sixty years of age, apparently in good health, while taking his breakfast, the hand which held the tea-cup dropped lifeless on the table. He felt no other ailment. In two hours after, Mr. V. found the arm, it is stated, completely paralytic, and he could feel no pulse in it, while the pulse in the other arm was natural in strength and frequency. The arm was cold, and its colour pale; but it soon grew dusky, and the dingy appearance increased hourly. About four hours after the attack, the patient's constitution became affected, symptoms of sinking appeared, and he died six hours after the seizure. The state of the parts was not examined after death.

The third case is one which was brought to the recollection of Dr. Wells, by the reading of the two already related. It had been mentioned to him by Sir G. Fordyce, who had attended the patient, along with Dr. Sequeira. Dr. Wells communicated the particulars, which he obtained from the latter gentleman, to the Society.

Case X.—A gentleman of sixty-two, in jumping over a puddle of water with tight boots on, suffered a disagreeable jar, and was slightly stunned at the moment. Next day he was attacked with a pain in the right foot, and in about a week after with a pain and swelling of his leg; and at the same time suffered from cough and difficulty of breathing, to which he was liable in winter. While things were in this state, he awoke one morning with excruciating pain in his left arm; and, in the afternoon, it became numb and motionless, and no pulse could be felt in it. He had no symptom of affection of the head, and his pulse in the other arm was natural. About

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* Edinburgh Medical and Surgical Journal, vol. ix. p. 449.

† Transactions of a Society for the Improvement of Medical and Surgical Knowledge, vol. iii.

the same time the pain and swelling of the leg disappeared. No change took place during the subsequent two days; but on the morning of the third, while making an exertion, he was seized with a convulsion or fainting fit, it seems uncertain which, and in a few minutes expired.

In this case, it is stated that the affected arm was examined next day by an eminent anatomist, who was unable to discover any organic disease in its blood-vessels. It is mentioned that the relations would not permit the head, thorax, or abdomen, to be opened; and it does not appear that the brachial artery was traced to its origin, so that an obstruction above the clavicle may have escaped detection.

The late Dr. Parry of Bath notices three instances which he had met with, in which the pulse ceased suddenly, in one arm, while it remained distinct in the other.*

Case XI.—In the first, this took place two or three days after parturition, and was attended with coldness of the arm; but the power of motion remained. The other arm had lost all power of voluntary motion, but the pulse was distinct in it. The patient soon died, but a dissection was not obtained.

Case XII.—The second was the case of a young man, affected with pulmonary hectic, who was found to have lost the pulse in one wrist, immediately after coming out of the warm-bath. Several months afterwards it had returned, though in an almost imperceptible degree.

Case XIII.—In the third case, a middle aged female had been affected with a severe cough, from which she was convalescent, and was walking about her house, when it was discovered that the pulse in one arm was wholly wanting. A few days afterwards she died suddenly.

In the first two of these cases, it may be supposed that the cessation of the pulse depended on a sudden obstruction of the artery, by rupture of the coats; but the third case is more difficult to explain, for it is stated that the whole course of the artery to the aorta was carefully examined after death, but no deviation from the natural state could be perceived in it. The particulars of the dissection are not related; and supposing that the artery had been only examined externally, it is possible that the morbid state I have described might have escaped observation. If the canal of the artery was actually pervious at the time of examination, some other cause of the stoppage of the pulse must be sought. I have already stated my reasons for believing that this could not be produced by a paralysis of the artery; and the only other supposition appears to be, that a spasmodic contraction had taken place in some part of its course, to which Dr. Parry seems inclined to attribute the absence of the pulse in all these cases. On making experiments on animals, it has been observed by Dr. Parry and others, that if a portion of the tube of an artery be exposed, a decided contraction sometimes takes place in it. It is possible that a similar contraction may take place in the human body, in certain circumstances, in an artery in its natural situation, but it must obviously occur extremely rarely; and notwithstanding this case by Dr. Parry, I conceive that it still requires to be established, that such a state of the vessel ever actually has been produced.

It is a question worthy of consideration, What is the cause of the sudden spontaneous rupture of the internal coats of the arteries? In cases where great violence has been suffered, as in Case IV, or in the reduction of a dislocation, as in the first stoppage in Case VII, it may be conceived that the inner coats of the artery, even in the healthy state, may have given way, without the infliction of an external wound. Richerand has stated, that, in the dead body, if the knee-joint be forcibly extended, till the ligament of the ham crack, and the limb be afterwards dissected, it will be found that fissures are formed in the middle coat of the artery, from the separation of its fibres from each other.* But in most of the cases of the affection which I have described, it seems necessary to suppose predisposition in the coats of the arteries to laceration, as this took place on the ordinary motions of the limb, which, in their healthy state, the arteries usually permit without injury, and as these obstructions occurred in different arteries of the same individual. In the third case, there was obviously a tendency to disease in the internal coats in general; and in the parts where the lacerations occurred, they were found thickened, soft, and pulpy,—a state resembling that which is known to be produced by inflammation in these coats. But whether this state preceded, and was, as I believe, the cause of the laceration, or was the result of incipient inflammation, succeeding to that laceration, must be regarded as doubtful. In the other cases in which the bodies were examined, there was nothing remarkable, or apparently diseased, in the arteries examined, except at the parts where the obliterations had taken place. It must, therefore, at present be regarded as undetermined on what the tendency to laceration depends. In several of the cases I have related, a considerable degree of constitutional affection and fever preceded and accompanied the obstruction of the arteries. Is this to be regarded as connected with, or dependent on, the state of the vessels, which makes them liable to the laceration?

As to the practical results to be deduced from the account of this disease which has been given, there is little which can be said. The constitutional symptoms which have preceded the attack in several of the cases, appear to have had an inflammatory character; and supposing that they may depend on a certain state of inflammation in the inner coats of the arteries, which by some pathologist has been regarded as the cause of a peculiar fever, and that this could be ascertained by the

* On the Arterial Pulse, p. 139.

* Nosographie Chirurgicale, t. 4, p. 197, 5th ed.

symptoms; the antiphlogistic plan of treatment appears to be that which holds out the greatest prospect of interrupting the progress of the disease. But it must be remarked, that, in two of the cases I have related, in which the constitutional symptoms were most distinctly marked, the first and the sixth, the antiphlogistic treatment was actively employed from the commencement of the illness, yet it had not the effect of preventing the obliteration of the arteries.

When the obstruction actually occurs, the lower part of the limb may be supplied with blood by anastomosis, as happened in several of the instances I have related; as in the obstruction of the lower part of the popliteal artery, and of the brachial artery in the first case, and in that of the brachial in the second; in the same artery in the fourth; and in the subclavian and axillary artery in the sixth and twelfth. In such cases, however, there will always be reason, I conceive, from the result of the cases I have related, to apprehend the occurrence of a similar affection in some other vessel, or that the patient may die suddenly from causes which are as yet involved in obscurity.

When the larger trunks of the arteries, where they pass from the trunk of the body to the limbs, become suddenly obliterated, there is reason to fear the occurrence of mortification of the limb, as happened in five of the cases I have detailed. In the first indeed, the mortification was produced by the obstruction of the upper part of the popliteal artery,—a situation in which it might be conceived that the lower part of the limb would, without difficulty, be supplied by the collateral circulation. But in this case, it must be remembered, that this obstruction took place at a period when the patient was much debilitated by his previous illness; and when the lower part of the popliteal artery was already obliterated, which would create a considerable impediment to the supply of the distant part of the limb by the anastomosing vessels.

When the obstruction has actually taken place in an artery, the treatment to be adopted is obviously that which is found to be most advantageous after the ligature of the vessels in operation. The collateral circulation is to be promoted by placing the limb in a proper position, and by maintaining its temperature by wrapping it in flannel, and by artificial heat placed at some distance from it. I should conceive it necessary to be cautious not to be induced by the pain which may exist in the limb, to apply any considerable heat or cold to it, or to have recourse to stimulant applications, for these seem to be liable to excite gangrene in a part in which the circulation is stopped or much diminished.

When mortification takes place, the principal objects of the practitioner appear to me to be, to support the strength of the patient by nourishing diet and stimuli, in such quantity, and of such quality, as have not the effect of increasing the fever, or aggravating the local inflammation, and the proper exhibition of anodynes for the alleviation of the pain, while attention is paid to keep the bowels regular, without purging. It is a point for consideration, whether amputation should be had recourse to, when the grangrene has fairly commenced, as has been recommended, and, in some cases, successfully practised, by Mr. Guthrie, in gangrene of the extremities, from gun-shot wounds of the main arteries of the limbs; or whether we should wait for the stopping of the disease, and the commencement of the separation between the dead and living parts? I may here remark, that it seems established by experience, that mortification is not so likely to ensue from the application of a ligature to an artery, by which the surrounding parts are little disturbed, as from a gun-shot wound of a similar blood-vessel; and that, when gangrene is produced by the first of these causes, it does not so uniformly spread till it terminates fatally, as, according to Mr. Guthrie's observation, that does which is produced by the injury of an artery by gun-shot. There are various cases recorded of gangrene from the ligature of arteries having stopped, and separation taken place, between the dead and living parts, at a considerable distance below the point where the artery has been tried.

The greater frequency of gangrene, and its more malignant character, after a gun-shot wound of an artery, than after its obstruction by ligature, may depend, as Mr. Guthrie has suggested, on the neighbouring vein or nerve, being generally also injured in the former case; but it appears to me, that they may also, in some measure, depend on the swelling and tension produced by the inflammation excited by the wound, impeding the circulation of the blood through the anastomosing vessels, to the lower part of the limb. In the spontaneous obstruction of the arteries, I should conceive that the probably diseased state of the arterial system, and the affection of the constitution, would be likely to render the success of the operation more doubtful than in a person in whom the gangrene has been produced by a wound, and that the surgeon will be warranted in waiting till the mortification shows a tendency to stop. In two of the cases I have related, the gangrene stopped, and the patients recovered; the one, by the bones having been sawn through at the line of separation; the other, by amputation above this line. In the other three cases in which gangrene took place, I do not conceive that amputation was admissible, or held out any prospect of advantage.

The rupture of the internal coats of an artery is, however, by no means always followed by the obliteration of the vessel. It perhaps more frequently gives rise to aneurism. After a violent exertion, or a strain, the patient sometimes feels an acute pain in some part of the course of an artery; in a short time a tumour is discovered, which communicates the sensation of pulsation, at first small, but which gradually increases in size, and follows the progress of aneurism. Here the internal coats have been torn, and the external is dilated by

the impetus of the blood; the canal of the artery above and below remaining pervious. The external coat is gradually extended, till at last it in some cases gives way, and the blood is effused into the neighbouring parts, forming a diffused aneurism, succeeding to a circumscribed; in other cases, the dilated external coat becomes adherent to, and incorporated with the surrounding parts, it is absorbed, and the sac of the aneurism, as it increases, is formed by these parts matted together by the adhesive inflammation. In cases of aneurism thus produced, there is every reason to believe that the inner coats of the artery have usually been in the state of disease, in which they become thickened and tuberculated, and sometimes ossified, and have in consequence been in a considerable degree deprived of their elasticity and flexibility,—a state in which they are readily broken, and seem to be rendered much less susceptible than in the healthy condition, of taking on the adhesive inflammation. It is perhaps by these circumstances we are to explain why the artery remains pervious, after the laceration, instead of becoming obliterated as in the cases I have related. In some cases of aneurism, however, it has been found that the inferior aperture of the artery communicating with the sac has been obliterated, but it is not possible to determine whether this had taken place at the commencement, or in the progress of the disease. In the first case of obliteration of the arteries I have given, a dilatation of the external coat, resembling a small aneurism filled with a coagulum, was discovered, on dissection, in one of the arteries; but its progress appears to have been stopped by the speedy closure of the artery both above and below the dilatation, by the process of adhesion.

Numerous examples are recorded in pathological and medical works, of obstruction and obliteration of different arterial trunks having been discovered after death. These may, however, have been produced in various ways, besides that to which I have directed the attention of the Society. In some cases the obliteration has obviously been the result of the pressure of tumours in the arteries; in others of the spontaneous cure of aneurisms which had formed. It may be also produced by the thickening of the internal coats of an artery diminishing its canal.

In many instances in which the external diameter of an artery is not altered, or only slightly increased, we find, on cutting it up, that the inner coats are thickened, sometimes having acquired a more friable and pulpy texture than natural; sometimes being converted into a curdy matter, sometimes cartilaginous, at others with an intermixture of ossific or calcareous deposition.

Dr. Abercrombie, in a paper on apoplexy, relates an interesting case of an old woman, in whom the pulse ceased in all the extremities in succession, and for a month previous to her death, could only be felt in the carotid arteries. She was at the same time affected with violent palpitations, and severe dyspnœa. On examination after death, the whole arterial system was found extensively ossified. In some places the tubes of the arteries were considerably diminished by the disease of their coats, and several of the large arteries were obstructed by firm coagula at particular points.* This state of the arteries is most frequently found to exist in a greater or less degree in cases of chronic mortification of the extremities. It generally extends over a considerable portion of the vessels of the affected limb, and not unfrequently over the whole arterial system, and seems to give rise to the gangrene, from the supply of blood being diminished, in consequence of the contraction of the tubes of the arteries; and partly, perhaps, from the interruption it occasions to the healthy functions of the arteries necessary for carrying on the circulation. In a case of chronic gangrene of both feet, in a middle aged man, which occurred in the Infirmary here some years ago, the arteries of the limbs were found universally diseased. In one thigh the vessels, though not increased externally in diameter, were found to have their middle and inner coats thickened to so great a degree, as almost entirely to obliterate the tubes of the vessels. In some parts these coats were soft, easily torn, and separated from each other; in other parts they formed a firm coherent mass, so that when the vessel was cut through transversely, it appeared a solid fleshy cylinder, with a small point in its centre, indicating the remains of the canal, into which it was not possible to pass an ordinary probe. The arteries of the other thigh, and of the legs, were so completely encrusted with osseous matter, as almost to form inflexible bony tubes. The parts illustrating this case are preserved in the Museum of the College of Surgeons.

This alteration of the coats of the arteries may be confined to a small space, and produce there the obstruction of the vessel, and the consequent cessation of the pulse in the limb below. Mr. Andral of Paris mentions a case in which, during life, the pulse of the left wrist was much more feeble than that of the right, and presented frequent irregularities, and, on examination after death, he found in the interior of the brachial artery, a little above its division, an irregularly rounded tumour, of a cretaceous consistence, which had formed under the inner coat, but had torn this membrane, and obliterated about three-fourths of the canal of the artery.† In cases of this kind, it is obvious that the closure of the artery, and the diminution of the pulse, must be gradual.

Even the trunk of the aorta itself has, in some instances, been obstructed and obliterated; yet the individuals in whom this occurred had survived, and the inferior parts of the body had been nourished, by the anastomising vessels. These cases illustrate many interesting points in pathology; but, at present, I shall

* Edinburgh Medical and Surgical Journal, vol. xv. p. 15.

† Clinique Medicale, t. i. p. 458.

only attend to them in relation to the manner in which the obstruction seems to have been produced. In two of them, a complete obstruction of the canal of the aorta had taken place immediately above its division into the iliac arteries. In one of these, accidentally discovered by Mr. Goodesson in a body, the previous history of which was unknown, a considerable portion of the aorta and of the iliac arteries was obliterated, and their canals filled by a firm fleshy substance; and their outer surface adhered firmly to the neighbouring veins, and surrounding parts. The artery above was diseased. It is not easy to determine, from the appearances described, whether the obstruction arose from disease and thickening of the coats of the artery, or was the remains of an aneurism, which had been cured spontaneously, or had been produced by the rupture of the internal coats.* In the other case, which is related by Dr. Monro, the obliteration was obviously the consequence of the progress of the spontaneous cure of an aneurism, the tumour of which still remained about the size of a common orange.†

But still more remarkable are those cases of obstruction of the aorta in which it has taken place in the thoracic portion. Three instances have been recorded in which this has occurred immediately beyond the arch of that vessel. In one of these, related by Sir Astley Cooper, a stricture was discovered in this part of the aorta, which, with difficulty, admitted the little finger, and was found to be produced by a thickening of the circular fibrous structure of the vessel, accompanied with some ossification of its coats. In this case, the contraction may be supposed to have arisen from the gradual progress of disease in the coats of the artery.‡ In the other two cases, it is more difficult to assign a cause for the obstruction; and it does not seem possible to explain it by any of the processes which I have noticed as giving rise to the obliteration of arteries. In the case described by M. Paris, the cylinder of the aorta, for a small space, was contracted to the size of a common quill, so that, when allowance was made for the thickness of the coats, which was not diminished, the canal that remained was exceedingly small. Above and below, the vessel was of its natural size; and M. Paris mentions, that, on the most careful dissection, he could not discover any cause for this extraordinary state.§ Dr. Graham has given a very interesting account of a case of this contraction of the thoracic aorta, which occurred in a boy of fourteen years of age, who was under his care. In this instance, the artery was completely impervious, for the space of about a line, the appearance being exactly such as if a ligature had been tied tightly round it. Between the stricture and the branches given off to the head and superior extremities, the aorta was preternaturally contracted, but nearer to the heart it was unusually expanded. Below the stricture it resumed its natural size. The coats were not thickened nor diseased.* In these cases, it is obvious that there was no tumour pressing on the artery, no appearance of remains of aneurism, nor any thickening of the coats, by which to account for the production of the obstruction. Neither can it be supposed that the obstruction was occasioned by the laceration of the internal coats of the vessel, for the appearances were not such as to indicate this; and, besides, it is almost impossible to conceive that the interruption to the passage of the blood could have been produced suddenly, without an immediate or very speedy fatal consequence.

It is true that the abdominal aorta may be suddenly obstructed without any immediate very violent injurious effects, and that the inferior parts of the body may be afterwards supplied with blood. In investigating the effects of the application of ligatures to the larger arteries, Sir. A. Cooper, whose active zeal in the study and improvement of surgery has not been abated either by the labours, the gains, or the gratified ambition, attendant upon having attained the highest place in his profession, made the experiment of tying the abdominal aorta in dogs, and he found that no immediate injurious effects were produced in the functions of the animal, that it maintained its usual health, and that the hinder extremities were freely supplied with blood by anastomosis.† Guided and encouraged by his knowledge of the wonderful resources of nature in compensating for the obstruction of the supply of blood through the ordinary channels in the human body, and by the results of his experiments in the lower animals, he was, some years afterwards, induced to apply a ligature to the abdominal aorta in the human subject, as offording the only hope of safety to a patient who was in immediate danger of perishing from hemorrhage, from a large aneurism of the left iliac artery, which had given way. He accordingly performed this operation with the dexterity and coolness for which he is so eminent.

This operation, perhaps the boldest ever undertaken, was unfortunately not successful in saving the patient, yet it did not appear productive of any injurious consequences, or to have any effect in hastening his death. On the contrary, the man lived for forty hours afterwards; the hemorrhage was restrained, and his state for some time seemed considerably improved; the process of closure of the artery had proceeded favourably; and although the aneurismal limb continued insensible, and became cold and livid, the right extremity had

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* Dublin Hospital Reports, vol. ii.

† Edinburgh Journal of Medical Science, No. iv. p. 362.

‡ Surgical Essays, Part i. p. 103.

§ Journal de Chirurgie. Par M. Desault. tom. ii. p. 107.

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* Medico-Chirurgical Transactions, vol. v. p. 287.

† Medico Chirurgical Transactions, vol. ii. p. 260.

recovered its natural temperature, and its sensibility, which had been at first impaired, was returning, indicating the restoration of the circulation in it.*

Although, from the facts just stated, it may be concluded that the abdominal aorta may be suddenly obstructed, and the circulation continued by other channels, yet they can by no means be considered as rendering it probable that the circulation could be adruptly interrupted through the aorta, so near to the heart as the site of the contractions in the cases which have been related, without rapidly producing fatal consequences.

Dr. Graham, in his remarks on the case to which I have referred, has expressed an opinion that in it the blood had not been but recently diverted from the natural channel. Notwithstanding the arguments in support of this opinion which he has adduced, I am disposed, from a consideration of the history of this case, and the absence of all appearance of recent disease or change in the contracted part of the artery, to doubt its correctness, and rather to adopt the first impression made on Dr. Graham by the inspection of the parts, and by "the limber and healthy appearance of the coats at the stricture," that the affection was connate, or at least that it must have occurred at a very early period of life. He has judiciously directed our notice to the identity in the site of the stricture in the different cases of contraction of the aorta within the thorax which have been observed, "lest after examples should prove a peculiar tendency towards its formation in this portion of the vessel, definite portions of continuous and similar structure being, in many instances, liable to particular diseases." An attention to this circumstance may, it appears to me, perhaps throw some light on the origin of these obstructions. In all the cases, it is remarkable that the stricture was situated exactly in that part of the aorta into which the ductus arteriosus enters; and it may be conceived that a similar tendency to obliteration to that which exists in this vessel, from a peculiarity of structure, or some cause as yet unknown, may have extended beyond its orifice into the neighbouring portion of the coats of the aorta, and given rise to the contraction of this vessel at the period of birth, or at the same time with that of the ductus arteriosus.

I may remark, that these cases of obstruction of the aorta, illustrate in a very striking manner a curious fact with regard to the supply of blood by anastomosis, and prove that the dilatation of the communicating vessels is not merely the result of their mechanical distention, by the increased impetus of the blood thrown into them. It is obvious that the blood would be sent with a greatly increased force into all the vessels between the seat of the stricture and the heart; but it will be observed, from the account of the dissections in these cases, that the only branches of the arteries which had become enlarged, were those useful in conveying blood towards the parts from which the supply of that fluid had been cut off. The subclavian arteries, and their branches, were much increased in size, while the carotid arteries remained of their natural dimensions.

I have now to conclude this paper, which has extended to a much greater length than I expected or intended. My object has been to give a connected view of the disease to which I have directed the attention of the Society, and of its relation to some other affections of the arteries, to which it bears analogy. It is sufficiently obvious how much any value the essay may possess in this respect, is derived from the contributions of my professional friends, and from the observations of others already published, which I have collected together from scattered sources. From the number of cases I have been able to collect, which have been observed within a few years, I am disposed to believe that the sudden spontaneous obstruction of the arteries is a disease of not unfrequent occurrence. It appears not improbable, that, on carefully looking back on cases which are recorded in medical writings and journals, particularly those of gangrene, others might be found in addition to those I have adduced, which might be referred to the same cause. I have no doubt, that, when the existence and symptoms of the disease become generally known to the profession, instances of it will recur to the memory of practitioners; and, at all events, when such cases occur in future, their real nature will be better understood, and we will thus obtain a more accurate knowledge of the pathology and progress of this morbid affection than we as yet possess.*

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* Surgical Essays, part. i. p. 114.

* Since the preceding paper was sent to the press, I have met with an account of an instance of cessation of the pulse still more remarkable than any of those I have noticed, which is given in a very interesting essay on diseases of the heart, by Mr. Adams of Dublin. The following is a short abstract of this case:—A medical gentleman, æt. 68, suddenly discovered that his pulse was imperceptible in the right arm, and unaccountably weak in the left. Next day no pulsation could be detected in any artery in the body; nor was the movement of the heart sensible to the hand laid over the breast. An obscure undulating motion could alone be heard, when the ear was attentively applied to the side of the thorax. He suffered much from dyspnœa, which prevented sleep, and which was not relieved by any remedy that was tried.

He continued in this state for seven weeks, when stupor come on, and speedily terminated in death. On dissection, the semilunar valves of the aorta were found completely ossified, and the ossification extended into the coronary arteries, so as entirely to obliterate their canals for an inch. Mr. Adams attributes the symp-

Since the article on the Spontaneous Obstruction and Effects of Laceration of the Arteries, contained in this volume, was printed, an opportunity has occurred to me of examining the popliteal arteries in two cases of severe, and rather uncommon, injury of the knee joint, in which the condyles of the femur were dislocated backward,—the integuments and soft parts of the ham had given way,—and the vessels in it had been violently elongated and lacerated. One of the cases occurred at the Royal Infirmary here, under the care of Professor Ballingall; the other was in a patient of Staff-Surgeon Stewart, Principal Medical Officer in Scotland, and Dr. Anderson, Surgeon of the 92d Regiment. I feel much indebted to these gentlemen for the obliging manner in which they have communicated the particulars of these cases, and permitted me to publish them.

The following is the statement given me by Dr. Stewart: "Private James Kennedy of the 92d regiment, a strong muscular man, twenty-four years of age, having been confined to barracks, and not allowed to go into town, on the 8th of April, made an attempt to force his way out of the castle, by leaping out at an embrazure on the southeast face of the fortification, a height of about thirty feet. The fall caused a compound dislocation of the left knee joint. When he was brought into hospital, the condyles of the femur were observed to be thrust through the muscles and integuments of the ham down over the head of the tibia. His countenance was pale and ghastly, and the whole system in a state of great depression and debility. The limb was quite cold, and no pulsation could be felt in the popliteal artery when the finger was placed over its course between the condyles; and the idea was, that the vessel had been ruptured. From the very extensive injury done to the knee joint, it was too evident that there was no chance whatever of saving the limb. As soon, therefore, as the system had sufficiently recovered, to allow the patient to undergo an operation with safety, which was about two hours after the receipt of the injury, Dr. Anderson, the surgeon of the regiment, amputated the limb by the circular incision. The femoral artery was the only vessel that required to be tied. The stump is nearly healed; and the patient has been altogether exempt from fever.

On examination of the knee joint, all the ligaments were found torn across, with the exception of the internal lateral ligament; the tendon of the popliteus muscle was also torn from its insertion; and partially the head of the gastrocnemius externus. There was a small fracture of the head of the tibia; the joint was filled with blood; and the two internal coats of the popliteal artery were ruptured.

ALEX. STEWART.

"*April* 21, 1828."

Being desirous to ascertain exactly the effects produced on the artery, by the violent elongation which it must have suffered, I inspected it carefully along with Dr. Knox, the Conservator of the Museum of the College of Surgeons. The outer surface of the vessel was found entire throughout its whole course in the ham; but, opposite to the projecting condyles of the femur, the artery was, for a third of an inch, suddenly constricted to about one-third of its diameter above and below. About half an inch above this constriction, the inner coats of the artery terminated abruptly in its whole circumference, in a slightly ragged edge. Between this edge and the constricted part, the internal surface of the outer coat was exposed, somewhat rough, having adhering to it some fragments of the inner coats, and ecchymosed. At the seat of the stricture, the canal of the artery was impervious; and, on slitting it up, the obstruction was found to be produced by flaps of the inner coats separated from the external, and irregularly coiled up in the vessel. At this part the external coat was thin, and its fibres drawn together, so that it could not be expanded to its usual breadth. The popliteal vein and nerve were entire.

The particulars of the other case are contained in the following letter, with which I have been favoured by Dr. Ballingall:

"*My Dear Sir*—You are most welcome to make use of the preparation of ruptured popliteal artery, which I deposited in the Museum of the College of Surgeons some time ago, if it can in any way illustrate your interesting and valuable paper, on the Sudden Spontaneous Obstruction of the Canals of the Larger Arteries.

"The patient from which it was taken, a middle aged female, was brought into the Royal Infirmary with a deep lacerated wound in the ham, through which it was stated, in a written report from a professional gentleman, that the condyles of the femur had protruded, and that the knee joint had been completely dislocated. The injury had been produced by a fall, which this poor woman had suffered while carrying a heavy load of coals on her back. There was no hemorrhage from the wound; but a good deal of swelling, and inflammation of the contiguous parts, extending up the whole thigh, had supervened, and was attended with much constitutional fever, which rapidly increased, and carried off the patient ten days after the accident.

"On the dissection of the limb, although

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toms, in this case, with great probability, to diminution of the muscular power of the heart, arising from the deficient supply of blood to its substance, combined with the mechanical obstruction to the passage of the blood into the aorta, occasioned by the ossification of its valves.—*Dublin Hospital Reports*, vol. iv. p. 443.

the crucial ligaments of the joint were torn, the capsular ligament was found to be entire. The blood-vessels of the ham were torn through; but as I made but a cursory examination of the parts at the time of the occurrence, and have not examined them more minutely since, you are probably better acquainted with the state of the artery than I am. I remain, &c.

"GEORGE BALLINGALL.

"*Queen Street*, 16*th April*, 1828."

Availing myself of Dr. Ballingall's permission, with the assistance of Dr. Knox, I examined minutely the state of the parts which are preserved; and the following are the appearances which presented themselves.

The large vessels of the ham are completely torn through, and their extremities, about two inches apart, are each surrounded by a bulb of very dense cellular substance, intermixed with fat and lymph, which adheres firmly to their coats, and cuts like cartilage. The vein near its torn orifices is contracted, and its coats thickened by interstitial deposition, and the tube of both the superior and inferior portion is filled by coagulum for about two inches. The coagulum is friable, and, internally, of a brown colour, apparently showing that it consists of coagulated blood. The clots fill the canal of the vein, but are without difficulty detached from its surface, except where some branches enter, also filled with coagulum, continuous with that within the main trunk. About half an inch from each orifice a valve is seen; and, opposite these valves, the tube of the vein is slightly swollen out, and the coagulum somewhat larger than in the other parts. The portion of the popliteal artery above the rupture, about four inches of which have been preserved, is diminished in size, and, for an inch from its extremity, adhered firmly to the surrounding cellular substance, and to the vein. The orifice was so completely covered by, and incorporated with, the condensed cellular substance, that it was not possible to distinguish its situation. On slitting up the artery, it was found to terminate half an inch higher than the extremity of the vein; and its canal contracted and obstructed for more than two inches. For half an inch above its extremity no remains of the two inner coats can be perceived; and the inner surfaces of the external coat appear to have adhered to each other. Above this, for about an inch and a half, the circular rugated appearance of the inner coats is distinct, and the canal is filled by a tough white coagulum, which adheres very firmly to the coats of the artery, particularly at various points, where it appears to send processes into interstices of these membranes, from which it is impossible to separate it without laceration. Above the coagulum, the tube of the artery is pervious but narrow; and, for some distance, the transverse lines on its inner surface are more strongly marked than in healthy artery. The orifice of the lower portion of the artery was found contracted, and adherent to the surrounding lymph and cellular substance, which, in fact, closed it. On slitting it up, its canal was found larger than that of the superior portion; its coats are thickened, its outer surface adhering to the surrounding parts; and its its inner surface marked with strong circular rugæ. It does not contain any coagulum. It divides, about half an inch from its orifice, into two large branches. The popliteal nerve is entire; and, in its substance, there is seen a tortuous arterial branch, almost equal in size to the temporal artery.

I have been induced to detail minutely the appearances of the arteries in these two cases, as there are but very few instances in which the changes produced in lacerated arteries of the human body have been described, and opportunities of observing them are rather uncommon; and because they appear to me to illustrate very distinctly the effects produced on the coats of the vessels at different stages of the progress of the injury.

In the first case, the artery may be regarded as in the act of laceration; and a very slight additional elongation must have torn it through. In it, the laceration of the internal coats, and the effect of this in immediately obstructing the tube of the artery, are distinctly demonstrated. The appearances also confirm, in a remarkable manner, the description given by Beclard, of the steps in the process of laceration, as quoted in my essay, "tandis que la tunique celluleuse continue à s'allonger, en se rapprochant de plus en plus de l'axe du vaisseau," &c.

In the second case, the time that had elapsed, and the inflammation that had taken place, between the occurrence of the accident and the death of the patient, render it impossible to ascertain exactly the effects which had at first been produced on the vessel; but the absence of the internal coats for half an inch from the torn orifice, and the firm adhesion of the coagulum to their surfaces above, seem sufficient to indicate the injury they must have sustained.

I may here mention, that in writing the Essay read to the Society, it escaped my recollection, that Mr. Hodgson, in his Treatise on the Diseases of the Arteries and Veins, has noticed the fact of the laceration of the inner coats of torn arteries, as ascertained by Dr. Jones in his experiment; and that he has also pointed out the constriction, sometimes observed in the extremities of arteries torn across, afterwards more particularly described by Beclard, of which he has given an illustration, by an interesting case of lacerated humeral artery, quoted from a paper published by Mr. Guthrie.* I gladly avail myself of the present opportunity to repair this omission, in relation to a work which derives so much value from the full and accurate account it contains of

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* Hodgson, p. 461.

every thing important to be found in the writings of preceding authors, with regard to the subjects of which it treats.

From the London Medical Gazette.

VACCINATION.

NO. IV.

To the Editor of the London Medical Gazette.

SIR,—The object of my last communication was to show, first, the incorrectness of that theory which would attribute the failures of vaccination to deterioration of the virus by successive inoculations; and secondly, the futility of that advice which would send us back to the cow for fresh sources of lymph, on the occurrence of any fresh sources of alarm. By a singular coincidence, the same number* of your Journal contained a brief notice of some recent experiments in Egypt, tending to show, first, that the cow was susceptible of the small-pox; secondly, that this animal converted the small-pox into the cow-pox; thirdly, that this converted disease was communicable to man; and fourthly, that from man it might be propagated without degenerating into small-pox. You remarked, with great justness, that these facts, if true, would prove of the utmost importance. They would set at rest that long disputed and curious question—whether the cow-pox is, or is not, a modification of variola. They would go far to determine the identity of the cow-pox, and the grease of horses; but above all, they would ensure to us, at all times, the means of combating the small-pox, since that baneful contagion might be made, on any emergency, to furnish its own antidote.

The respectability of the source whence this information was derived, precluded all doubt as to its authenticity; though I could not but consider it as singular, that facts of this importance should have been first made out by medical gentlemen in Egypt; and that, being so important, they should have first found their way to this country by the very circuitous rout of India. The idea, however, once started, it became very desirable to set the matter at rest, more especially as several circumstances were omitted in the statement communicated to Dr. M'Michael,—viz. first, whether the cow, in converting the small-pox into cow-pox, underwent any constitutional indisposition; secondly, whether the same animal was susceptible of the disease more than once; thirdly, whether the local appearances in the cow resembled those described by Jenner, as appertaining to his cow-pox; and lastly, where, when, and how, the inoculation of the animal might be most successfully performed.

To determine these curious points Dr. Naylor and Mr. Mayo made the experiment upon an Alderney cow at Paddington; while Mr. Sewell, of the Veterinary College, anticipating very ingeniously an objection, that possibly this cow might have already passed through the cow-pox, and been thereby rendered unsusceptible, made (with the assistance of Mr. W. Wheeler) a similar experiment upon a fine calf, at the Small-Pox Hospital. Mr. Sewell, anxious that no means should be left untried of improving our knowledge of the connexion of human and epizootic maladies, took the same opportunity of inoculating, with fluid small-pox matter, two lambs, and some rabbits. In none of these instances did the inoculation take effect. Conceiving that possibly this disappointment might have arisen from accidental circumstances, and understanding from Dr. Paterson (late of Ayr) that he had succeeded, in various instances, in communicating the small-pox to a cow, while in milk, Mr. Coleman, zealous in the same cause, has since inoculated another cow and an ass, with variolous matter furnished by me. Mr. Alcock assisted at this experiment. Speculating upon the possible causes of the former failures, I was led to suspect that they might depend upon the animal's constitution being unsusceptible of a truly human poison. To determine, if possible, this point, I vaccinated, on Friday last (in presence of Mr. W. Wheeler,) the calf (the subject of the prior experiment,) with lymph, descended in an uninterrupted stream from that which was originally supplied to us from the cows of Mr. Harrison's dairy in 1799. The results of the former experiment cannot yet be known; but I may add, that the vaccination has taken no effect upon the calf beyond that of a common irritant.

Whatever conclusions these experiments may lead to, with respect to the pathology and mutual relations of cow-pox and small-pox, one thing at least appears to be certain, viz. that no reasonable hope can be entertained of procuring, by this means, a supply of vaccine matter in any district or country into which small-pox may have accidentally found entrance. Though I am far from thinking that these experiments have hitherto been carried to their farthest reasonable limit, yet enough has been done to show that the communication of small-pox to the cow is both difficult and uncertain; and, therefore, that other means must be resorted to for keeping up the supply of vaccine lymph, and rendering it at all times available for the protection of the human race. The difficulty of effecting this has always been acknowledged; but few, except those who have turned their attention seriously to the subject, could imagine how very great that difficulty is. In the West India islands, and all other small societies, keeping up their own supply of recent lymph is impossible. No single practitioner in England, however extensive his practice, is capable of doing it. Even the public establishments in London, devoted to the task, find a difficulty in effecting it during the months of December and January, when parents, with a natural and praiseworthy

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* Vide Journal of Foreign Medicine, Vol. II. page 92.

caution, hesitate to expose their children to the keen blasts of a wintry air. It may be stated, without fear of contradiction, that such public establishments are indispensable to the preservation of vaccine lymph in this or any other country; and the question for consideration, therefore, resolves itself simply into this—how can such establishments be kept most effective?

In all (or almost all) the countries of Europe,—in India, in Ceylon, at the Cape of Good Hope,—and, I believe, in most of our other large colonies,—the supply of vaccine lymph to the public is taken under the protection of government; and when we reflect how much the attention of individuals is subdivided, no one can doubt for a moment that a wise government will never submit a matter of so much consequence to the community to the chance of neglect, or delay. In London, the liberality of the public, and the philanthropic spirit of a few individuals, have opened sources of vaccine lymph, independent of those which the government furnishes; but still it cannot be questioned, that, to the National Vaccine Establishment, this country must mainly look, for its regular and permanent supplies of vaccine lymph.

Vaccination had been known and generally practised in England ten years before it was taken under the protection of government. It was not until 1808 that the National Vaccine Establishment was formed. Within a very short time afterwards, it was placed on the footing, and under the superintendence which it now enjoys. That it has been eminently serviceable in distributing vaccine lymph to all parts of the United Kingdom, and to many distant countries; and that those connected with it have been most assiduous in their exertions to extend its usefulness, is most true. No one is more fully sensible than I am of its well-earned character; and if I throw out a doubt how far, as at present constituted, it is calculated to meet the wants of the times, it is for this very reason,—because I have seen and watched its sphere of usefulness, and wish to see that sphere extended.

But a very few months have elapsed since my opinion was asked on the subject of a central or National Vaccine Establishment at Edinburgh; and I then learned, for the first time, that the North of Scotland had no other *certain* means of supplying themselves, on an emergency, with vaccine lymph, than application to London. The ample and steady supplies which an enormous population, like that of Edinburgh and Leith, is so well calculated to afford, are, in a manner, lost for want of care. Nor can a private institution supply the deficiency. The free transmission of lymph by post, essential to its general utility, is a power vested in the National Vaccine Establishment alone. In reply to an offer which I made to the government in 1825, to supply country practitioners with vaccine lymph from the Small-Pox Hospital, I was informed that such a privilege could not be granted, without admitting a precedent which would be attended with great inconvenience.

A conviction of the necessity of vaccinating with recent lymph, if we desire to ensure the success of the operation, and of the importance of public establishments having the privilege of free transmission by post, for the due supply of such recent lymph, induces me to think that great advantages would arise if the plan of the National Vaccine Establishment were enlarged; if *branch banks* were established for the greater facility of obtaining, and distributing lymph; and if the whole were placed under the superintendence of a central committee in London. It is far from my wish to occupy your columns by a detail of the measures which such a plan would render necessary. I cannot, however, have daily before my eyes the advantages which the affluent population of London enjoy in the possession of public establishments for the diffusion of vaccine lymph, without desiring, as far as in me lies, to extend the same to the poorer classes in the country.

When I call to mind who are the individuals who at present guide the National Vaccine Establishment, I feel convinced that if such a measure as I now contemplate be really required, it will be carried into effect. I can of course know but little what facilities of obtaining effective lymph the population of the provinces enjoy, and I may perhaps have overstated the case. In the event, however, of my suggestions being thought worthy of attention by those to whom the government entrusts the important task of superintending the public supplies of vaccine lymph, I venture to add the following hints.

The districts in which branch establishments are formed should be such as will afford not less than 500 vaccinations annually. They should be conducted by medical men, sufficiently paid to enable them to give up three of the best hours of the day to the purposes of vaccination. Their remuneration should come in part from the medical men in the vicinity, (who, in return, would have free access to the establishment) and in part from the government, who would claim, in return, the privilege of directing and overlooking their proceedings. For this purpose one or more persons should be charged with the duty of inspectors, and by them all matters of detail would be regulated.

On a careful consideration of the whole of this interesting subject, I have satisfied myself that no measure would go so far to meet the emergencies of the case as that which I have now suggested; and I cannot for a moment believe that the government of the country would grudge the additional expense which it would entail, or refuse to extend to the provinces that boon which the experience of twenty years has proved to be of incalculable value to the inhabitants of the metropolis.

I have the honour to be, Sir,

Your very obedient humble servant,

GEORGE GREGORY.

From the London Medical Gazette.

ON SOME OF THE DISEASES OF THE STOMACH, *connected with Watery Secretions from that Organ.* By EDWARD J. SEYMOUR, M. D.

The word pyrosis has been applied, and is very generally used, to designate the secretion and discharge from the stomach of a transparent watery fluid without any taste; the action of the stomach by which it is evacuated being unattended, in the majority of cases, by any pain, which is, however, occasionally present.

The complaint is unaccompanied by fever.

The disease commonly yields to the employment of astringents and opiates, and, in very mild cases, astringents and alkaline, or antacid medicines, are usually successful: to these are added a regulated diet of animal food, and abstinence from the use of acids or acescent vegetables.

This disease is more common in women than in men, and in my observation more frequent at the middle and latter periods of life than in youth.

The pyrosis which is said to be prevalent in Scotland and Ireland is believed to arise from the constant use of vegetable food: of such cases I have no experience, and I am not acquainted with any authentic observations on the pathology of the disease, as it occurs in those districts.

The following remarks apply to cases of secretion of watery fluid from the stomach, as they are presented to the observation of the physician in large towns, and among persons from whose manner of living it is manifest that the exclusive use of vegetables cannot be considered as a remote cause of the disease.

The first cases I shall relate are those in which this disease appears to arise from increased sensibility of the nerves supplying the secreting surface of the stomach. The best theories of secretion attribute to the nerves the principal part in the performance of this function, and the fact of the frequent occurrence of the disease in persons whose nervous system is unusually deranged generally, would lead us to this conjecture.

But in addition to describing such cases—viz. derangements of the functions of the stomach—it is the object of the following remarks to point out some organic diseases of the stomach itself, or of the neighbouring viscera, of which pyrosis is a leading symptom, that we may not in practice undervalue, when first presented to our notice, a symptom occasionally of serious and even fatal disease, because, in the majority of cases, it attends a morbid condition of the stomach of frequent occurrence and easy relief.

I proceed to speak of the secretion of watery fluid from the stomach, without disease of structure of the organ itself, or of the neighbouring viscera.

One of the most ordinary forms of this disease is the secretion of watery fluid from the stomach in elderly people, who are easily disturbed or distressed by the operation of trivial causes: such cases must be in the knowledge of every practitioner, and I shall therefore only select one case from among several to exemplify its nature and treatment.

Case 1.—In the summer of the last year, a lady, æt. 63, who resides in the country, came to London for advice, being greatly annoyed by the frequent recurrence of pyrosis. These attacks occurred often spontaneously, but more frequently were the result of some sudden emotion. A sensation of "the gurgling of fluid" was first felt about the umbilicus, rising upwards, and this was immediately followed by the discharge from the stomach, without effort, of about a pint of clear tasteless fluid. Although the discharge was attended with no pain, yet a sensation of great relief was reported to follow its excretion. The bowels were regular; the tonge clean; no pain or tension were found to exist on pressing the epigastrium; no fulness or hardness were observed in either hypochondrium. The urine was clear and of natural quantity and colour; the appetite good. There was no vomiting after taking food. It appeared to me to be a simple case of increased secretion from the stomach, owing to the increased sensibility of the nerves of that organ. I desired the patient to leave off the use of vegetables and malt liquor; to take after each meal a glassful of lime water, and to substitute *weak* brandy and water with her dinner for wine.

To strengthen her general health she was ordered the use of the shower-bath, and to check the existing state of disease the following draught was ordered thrice daily for a week:—℞ Confect. aromat. ℈j.; confect. opiat. gr. xviii.; T. rhae. ʒiij.; aq. meuth. pip. ʒix. M. Fiat. haust.

I had the satisfaction of hearing recently that the patient's health had not suffered from an attack of her complaint for several months past.

I have said that the watery secretion from the stomach is sometimes attended with pain; such cases often resist the means so serviceable in those to which I have just alluded, the stomach being altogether unable to change into nourishment the animal diet so useful in more recent or less severe instances.

The following will best elucidate my views on this subject:—

Case 2.—The servant of a lady of rank, æt. 29, applied to me in the spring of the year 1827, under the following circumstances:

She had acute pain at the pit of her stomach, often followed by the rising of tasteless fluid into her mouth, so suddenly as occasionally to pass through the nose. She was much emaciated; her pulse was weak; her tongue white, with a cream-like fur on it; her sight, she said, was dim; her appetite very indifferent; and on taking food she occasionally, but seldom, returned it by vomiting. The catamenia were less than usual in quantity, but observed the ordinary period: she slept tolerably well. Her complaint had lasted four months, during which time she had taken every species of medicine usually ordered for disorder-

ed stomach and bowels: mercury in full doses, and, as an alterative, bark, bitters, absorbents, opiates, the subnitrate of Bismuth, the Prussic acid, alkalies fixed and volatile, and blisters; each in their turn had been applied without effect. It occurred to me that food entirely of one kind, and in small quantities, persevered in for a considerable time, and aided only by such remedies as would allay the increased sensibility of the nerves which supply the secreting surface of the stomach, were most likely to effect a cure. I ordered her the following medicine for the latter indication:—℞. Extr. conii, gr. iv.; aq. cinnamom. ℥ss.; liquor. calcis, ℥j.; syrupi, ℥ss. M. Fiat haustus, ter in die sumendus.

For the article of food I recommended abstinence from every thing except bread and milk, which was never to exceed in quantity at one time what might be contained in a breakfast cup.

The patient had the good sense and resolution to persevere in this regimen for more than a month, at the end of which time she was free from complaint.

She has experienced no relapse.

Case 3.—Mrs. W. æt. 43, the wife of a small tradesman in poor circumstances, was admitted into the Asylum for Recovery of Health, under my care, Jan. 11, 1827.

She complained of extreme debility, with constant eructations of wind from the stomach, and pain at the scrobiculus cordis. Tongue clean, no vomiting after food, but she is constantly bringing up from the stomach small quantities of clear, tasteless fluid. This fluid occasionally passes through her nose, from the rapidity with which it is discharged from the stomach. The pain is not increased after taking food.

There is great nervous distress, augmented by the least noise: she has some headach, but it is not constant; occasional urticaria. Appetite impaired; catamenia have been absent since July, slight leucorrhœa; bowels regular. She has been ill several weeks.—℞. Subnitr. bismuth. ℈ss.; magnes. carbon. ℈ss. M. Fiat. pulvis, bis in die sumend. ℞. Sp. ammon. arom. ♏xxv.; mist. camphoræ, ℥x. M. Fiat. haust. p. o. n. sumend. Applic. Emplast. canthar. epigastrio.

These medicines were continued, with regulated animal diet, until the 24th, when the report is as follows:

Great pain and uneasiness about the scrobiculus cordis, with constant rising of fluid through the nose. Pulse 76, weak; tongue clean; bowels open.

She was ordered a pill of half a grain of calomel and six grains of extr. conii twice in the day, instead of the bismuth powder.

This plan was attended with no advantage, and on the 1st Feb. I was determined to have recourse to the following medicine, and strict milk diet.—℞. Pulv. rhæi, gr. v. fit. pulvis bis in die sumend. cum. haustu sequent. ℞. Magnes. ℈ss.; potassæ carbon, ℈j.; aq. fontan. ℥.; sacchari, ℈j. M. Fiat haustus, cum. coch. j. max. succi recentis limonum sumend.

On March 5, the report is, by living only on milk, with the medicine last prescribed, she has gained flesh and strength, and is free from pain.

The strict regimen distressed the patient so excessively that I yielded to her entreaty to be permitted a slice of meat daily. Three days afterwards her symptoms returned, and it was not until after a perseverance in the exclusive use of milk diet for three weeks longer that she entirely recovered.

She left the Asylum on the 27th of March, free from ailment, having gained flesh very considerably.

I proceed to a most important part of the subject; viz. that watery secretion from the stomach is often a symptom, and sometimes the only symptom, of commencing organic disease of the stomach or adjacent viscera.*

Case 4.—In November, 1826, a gentleman, æt. 59, of sedentary habits, and much oppressed by the fatigue of business, but who had enjoyed good health for many years, consulted me for pyrosis; which he described as the occasional rising into his mouth of a tasteless fluid, without any pain or uneasiness whatever; and he never vomited his food. The whole quantity of tasteless fluid evacuated on these occasions might amount to an ounce and a half at each time, occurring sometimes twice in one day, but often not more than once in several days.

The patient's diet was regulated to small quantities of animal food, and he was ordered 20 minims of liquor. potassæ in lime-water thrice daily. The inconvenience, however, was so slight, that he does not appear to have complied with the prescription.

A few months afterwards a large tumour was observed in the left iliac region, which ultimately proved to be fungoid disease of the whole of the inferior half of the cavity of the stomach. No symptom except the pyrosis could call the attention of the physician to disease of this organ.

In Dr. Parry's Works, vol. ii., a case of ulceration of the stomach is related; the proper symptoms of which, at all times obscure, were preceded, for several months, by attacks of pyrosis.

There is also a case now under my own care, of confirmed organic disease of the stomach, where I was first led to examine the state of the abdomen, from the discharge of watery fluid from that organ.

Pyrosis occasionally arises where there is disorganization of neighbouring viscera, the stomach itself remaining healthy in structure.

Case 5.—A very remarkable case of this kind occurred recently at the Middlesex Hospital, under the care of Dr. Macmichael, to whose kindness I was indebted for the oppor-

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* I must by no means be understood to say, that organic diseases of the stomach, or adjacent viscera, do not occur without pyrosis; but that pyrosis is often a leading symptom of such diseases.

tunity of seeing it. As the general statement of the case has already appeared in the Gazette, I shall only allude to it here in support of my position.

The case was that of Mary Perry, admitted Dec. 1827. There was a tumour in her abdomen, which occupied the whole of the epigastric, umbilical, and part of the hypogastric region, very tender to the touch. She vomited her food frequently; but, in the intervals of vomiting, she brought up, without effort, much transparent watery fluid, generally without taste, occasionally saltish. This amounted to three pints in the twenty-four hours; and had, in less quantity, been observed from the earliest stage of the disease.

On her death, the tumour appeared to be formed by the liver, greatly enlarged from the presence of those tubercles which have received from Dr. Farre the name of "Tubera diffusa," and have been classed by the French writers with other cancerous and malignant tumours, under the name of "Encephaloides." The stomach was quite healthy in structure, but lay collapsed, its greatest breadth being not more than two inches, its greatest length about seven.

A case not very dissimilar to the foregoing occurred to my observation at Guy's Hospital, under the care of Dr. Richard Bright, in the autumn of 1823. Unfortunately the notes of this case are mislaid; but it was remarkable for the constant secretion of fluid from the stomach, (here, however, it was acid.) The vomiting which accompanied it; the rapid loss of strength, and pain, gave rise to the idea of cancer pylori being present. After death the stomach was found to be healthy, but subject to great pressure from the liver and spleen, much enlarged by chronic inflammation.

Another condition in which the secretion of watery fluid from the stomach appears in conjunction with or symptomatic of disease in other parts, is where it precedes either the formation of renal calculi, or their passage from the kidney to the bladder. My limits will not allow me to detail cases of this kind: I must therefore refer to Dr. Parry's works, in which he describes his own frequent attacks of pyrosis, preceding, as they often did, very severe paroxysms of nephritic colic.

From the Bulletin des Sciences Medicales.

DR. HEIBERG ON THE SPEDALSKHED; *an Eruptive Disease endemical in Norway.*

This disease, which is observed in the environs of Bergen, and the adjacent part of the province of Drontheim, and improperly designated by Fabricius under the name of Lepra, must not be confounded with the Radesyge, so well described by Prof. Holst, of Christiana. It is a species of elephantiasis, affecting a great number of individuals, who, considering it as incurable, rarely resort to medical assistance.

It occurs under three varieties, namely, the *squamous*, the *tuberculous*, and the *glabrous*. The disease ordinarily commences by a sensation of lassitude, heaviness, and internally cold, especially in the inferior extremities; the patient is affected with insomnia, and a troublesome pruritus on the surface, quickly followed by complete insensibility of the members. These symptoms continue a longer or shorter time, in different cases, but generally at the expiration of a year, others, more characteristic make their appearance, while those above mentioned still continue.

In the *squamous* variety, there is first perceived a dryness and corrugation of the skin of the hands and feet, which gradually extending, particularly on their internal surface, attain, in some instances, the thorax and abdomen; at a later period, a dry herpetic eruption is observed, attended with a furfuraceous desquamation of the epidermis. This eruption disappears and returns alternately, and is particularly troublesome by reason of the violent pruritus by which it is accompanied; it ultimately becomes fixed, and forms large incrustations nearly an inch in thickness, which greatly impede the motions of the extremities. The axillary and inguinal glands swell, a slight chronic inflammation attacks the conjunctiva, and eventually the cornea becomes opaque. In some instances, the hairs of the eyebrows are detached. The physiognomy of the patient is so peculiar, that the disease once seen, is readily recognised. The articulations of the feet and hands swell, the bones become carious, the fingers and toes are sometimes detached, and the patient cannot walk without great difficulty. He rarely, however, experiences acute pain; cannot endure the rays of the sun, and is generally better in winter than in summer.

The *tuberculous spedalskhed* is distinguished by grayish, violaceous, and shining stains, at first small like petechiæ, but increasing in size and becoming more numerous, both on the face and extremities. These stains are succeeded by tubercles, or rather, they pass into the suppurative state. Occasionally, the tubercles are developed without these precedents; they commence on the face, and extend sometimes to the tongue and ears,—the hairy scalp and trunk are always unaffected by them. Presenting a similar hue with the stains, the size of the tubercles varies from that of a large nut, to a hen's egg. The lips are tumefied, and often covered with a brownish incrustation. The extremities swell enormously, particularly the arm and thigh; the diseased parts are insensible, and deep incisions may be made through the skin without occasioning the slightest pain. The nose is sometimes totally destroyed, the senses of smell and taste are abolished, vision is lost as in the other variety, the eyebrows fall off, deglutition is difficult, and respiration constricted, so much so, frequently, as to threaten suffocation; the voice becomes hoarse, speech unintelligible, a violent cough supervenes, the tumefaction and tubercles attack the trachea, and death is caused either by suffocation

or marasmus. In relation to the ulcers which frequently form on the extremities, they have a rounded form, and are not very deep, with margins elevated, whitish, and absolutely insensible; their base is of a red or reddish brown colour, generally without inequalities; there is an abundant secretion of sanguinolent serum, rarely or never a laudable pus. The contour of the ulcers is shining and unequal.

The *glabrous* variety is more rare; there are neither eruption, stains, nor tubercles; the skin is smooth and dry, but has an indurated feel; ulcers form on the extremities, and the joints become carious; the countenance assumes an aspect of senility, the eyebrows fall off, and the eyelids suffer from a singular disease, producing what has been called lagophthalmia. The upper eyelid is unaffected, but the inferior is shortened, immoveable, and turned outwards so as to form a complete ectropion. When the patient sleeps, the globe of the eye is directed upwards beneath the upper palpebra, and he supposes that his eyes are closed, which however he is unable to effect. Vision is soon entirely destroyed.

All the varieties of the spedalskhed have moreover, a very repulsive odour, which exhales from the whole body, and especially from the ulcers and breath.

Such are the principal symptoms of this hideous disease. Dr. Heiberg intends shortly to publish a more complete work on the subject. He observes that he has been successful in his attempts to cure it.

From the Lancet.

DIABETES.

"EXPERTO CREDE."

To the Editor of the Lancet.

SIR—In your admirable columns, (Lancet, vol. vi. p. 408,) a case of diabetes is detailed, from Magendie's Journal de Physiologie, illustrative of the efficacy of venesection.

More recent discussions on that interesting and vitally important subject, by Drs. Ayre and Barry of London; the former advocating its local abstraction, (cupping,) and the latter an exclusively animal diet, induce me, at this distance, to take up my pen, to offer a few practical remarks and observations, on the pathology and therapeutics of diabetes.

That diabetes, generally speaking, is a functional, (constitutional,) and by no means an organic affection of the kidneys, is tolerably obvious from the deranged, not to say vitiated, state of the alimentary passages, which both precede and accompany it; the emaciation and debility consequent thereon, and the dissections, such at least as I have myself witnessed after death. Chylification, it is well known, is the commencement, and excretion (intestinal, urinary, and cuticular) the completion of digestion, the latter proving defective or redundant, as one or the other of these valued excretions fails to perform its proper function in the economy. Heightened by predisposition or habit, perchance the kidneys, from a sympathy peculiar to them, are prone to deficient or excessive secretion, as dysuria and diabetes amply testify. The intestines and skin also have these predispositions—as constipation and diarrhœa, (dysentery being somewhat of an organic affection,) and a parched skin and profuse sweatings, no less testify. These important passages, neither elegantly nor classically expressed, "outlets" (bearing organic affection) prove obedient to the mighty work of digestion; hence an imperfect chylification is wont, as might be expected, to derange and vitiate them. Fermentation, depravity of secretion, and a want of tone, constituting dyspepsia, are common to the alimentary passages, and a fertile source, primarily, of diabetes. In conjunction with my friend, the late amiable and scientific Dr. Watt of Glasgow, many years ago, I first witnessed the effects of venesection, to any extent at least, in diabetes; and it is but due to science to say, that I remarked at the time, and have had it amply confirmed since, that without marked attention to the digestive organs, and fæcal excretion afterwards, the patients were addicted to relapse; which, ultimately, in some instances, proved fatal. The human fabric, be it impressed upon the practitioner's mind, will seem to rally, at times, under venesection, when its powers manifestly are verging to destruction. In the diabetes of extreme youth, or old age, little benefit, if any, will be derived from local or general blood-letting; for the vital powers, in the one case, are not established, and, in the other, perhaps are too feeble to carry on the great business of circulation. Nor have I found "exclusively a diet of animal food" at all suitable on such occasions, from its acknowledged disposition to generate a species of repletion, (both sanguineous and excrementitious,) fertile of cerebral, and hepatic affection in the aged, (as apoplexy and palsy;) and of pulmonary affection, on approaches to manhood, which phthisis confirms beyond the possibility of a doubt. In the cases of diabetes alluded to, a want of tone is apparent in the kidneys, and alimentary passages throughout, which the undue distention of, by fermentation, has tended not a little to establish. From no inconsiderable experience, I can affirm, that here the cortex cinchonæ lancifoliæ, fresh, and finely powdered, will be found to prove most eminently efficacious. In confirmed cases, however, it is needful, at the same time, to blister the sacrum, with a view to counteract the morbid action of the kidneys, and even essential to correct and secure a regular action of the intestinal passages. The quantity of bark should not exceed ʒss. or ℈ij. in a sufficiency of any simple vehicle, (say water or skim-milk,) three or four times a day; and the subsequent form of pill, I have found to prove the best accompaniment. ℞. Pil. colocynth. c. —— hydrarg. pulv. jacob. aa

gr. xv. ad ℈i m. ft. pil. duodecim: one, two, or three of which, may be had recourse to at bed time daily.

Regard must be had to temperate regimen, thorough ventilation, cold ablutions, and exercise in the open air daily. If morbid secretion (rather than mere fermentation, and want of tone in the stomach and alimentary passages) prove a chief source of diabetes, which a bad digestion and vitiated intestinal excretion had long foretold, characterised, as they had been, by a foul coated tongue, pyrosis, gastrodynia, constipation, or occasional diarrhœa; we must be careful, under such circumstances, to prepare the patient for the specific (i. e. tonic) operation of the cinchona. The preparation to which I allude, is to correct a morbid state of secretion, whether of the stomach, liver, or alimentary passages, by mild mercurial, antimonial, aperient remedies, (such, for example, as pil. hydrarg., pulv. jacob., magnes. sulph., soda carbonat., &c.;) aided, it is important to remark, by judicious regimen, a tranquil tone of mind, (for mind proves a fertile source, primarily, of dyspepsia,) frequent cold spongings of the chest and abdomen, sufficient ventilation, and exercise in the open air daily. Heat being a powerfully exciting cause of fermentation throughout the alimentary passages, and fermentation a fertile source of indigestion, I have ever found these cold ablutions of the chest and abdomen beneficial, to say the least of them, under dyspepsia. I am moreover firmly of belief, that a deteriorated atmosphere, the result of insufficient ventilation, tends greatly to derange and vitiate the secretions and excretions of the body, on the perfection of which, we depend for health and longevity.

Another, and by no means unimportant consideration in diabetes, and I conclude. I allude to the temperature,—heat, more properly speaking, of the patient. Such patients, from time immemorial, have been kept warm, when, in fact, night or day, they can scarcely be kept too cool, if we study at all their convalescence. Reposing on beds of down, and wrapping in flannels, have proved most prejudicial, not to say fatal, to them. The same might be said of warm bathings, of tepid spirituous potations, and of forced, as I would define it, rather than excessive, venery. That inordinate thirst which prevails in diabetes and dropsy under opposite states of the kidneys, is fostered greatly by habit, and ought not to be given way to, if we expect to restore either healthy action or secretion of the alimentary passages, the skin, or the kidneys. Our errors in practice arise, very many of them at least, from insufficiently distinguishing in our modes of treatment, at any rate, between functional and organic affection, which require, not unfrequently, a marked and opposite mode of practice, and this I would impress upon the practitioner's mind, in his treatment of diabetes.

In a word, it is plain that venesection, cupping, and "an exclusively animal diet," are but ill adapted, either for the prevention or cure of diabetes; consequently, for mere relief's sake, we must not wield such doubtful, not to say dangerous, weapons—seeing that we have at command more temperate, efficacious, and permanent measures.

I remain, sir,
Respectfully yours,
W. Horsley, M. D.

North Shields, April 15, 1828.

From the Transactions of the Edinburgh Medico-Chirurgical Society.

OBSERVATIONS ON THE NATURAL OR SPONTANEOUS CURE OF SYPHILIS. By John Wilson, M. D., Hull.

From the time of the celebrated John Hunter, the various symptoms of syphilis have been so well described, and the appropriate treatment of each so accurately pointed out, by many distinguished authors, that there seemed to be no room left either for improvement or farther discussion.

The practice of the medical officers of the army, has, indeed, within the last few years, introduced a new era in the history of this disease; but as the inquiries they have so meritoriously instituted, and so candidly related, may not convince every mind of the propriety of their practice, and of the deductions which naturally result from its success, I shall offer a few observations on the causes most likely to impede its adoption, with some facts and inferences which seem to confirm the principles on which their practice is founded: for, notwithstanding the apparent advancement in our knowledge of this disease, there is perhaps no other which still produces more discordant opinions among practitioners, or whose effects are contemplated with more anxiety by the patient.

It has always appeared to me, that much of this uncertainty may be attributed to the division of lues venerea by some of the later writers, into syphilis, and pseudo-syphilis. I shall therefore begin with inquiring into the propriety of this division.

The primary symptoms of syphilis are well known to vary much in their nature and extent, from a simple abrasion of the skin, to the true syphilitic chancre, or phagedænic ulcer, as described by authors; they have often been observed to heal spontaneously, or under the application of topical remedies only, without being succeeded by secondary symptoms; and the mildness or severity of the latter has no apparent relation to that of the former; for secondary symptoms of various kinds and degrees, sometimes supervene even in cases where no primary symptom had existed, or in which it had been so slight as to pass unobserved. The secondary symptoms have also long been known to disappear spontaneously sometimes, and many well authenticated cases of their removal, by remedies of little or no acknowledged virtue in the present day, are

on record: I allude to a period preceding the late cures by the medical officers of the army, by simple topical applications, and a rigid observance of the antiphlogistic regimen. The nitric acid, for example, about twenty-five years ago, had a higher reputation than any other remedy ever acquired except mercury; and this was founded on as indisputable evidence as medical facts will admit of. Even the success of many inert quack remedies, well known to contain no mercury, may be fairly admitted as a confirmation of the tendency which this disease has towards a natural cure.

The belief, however, of the undeviating progress of the syphilitic virus, and the hopelessness of combating it by any other remedy but mercury, were so firmly established, that these favourable terminations were either regarded with indifference, or the disease was deemed to have been not truly syphilitic.

With those extensively engaged in the treatment of lues venerea, the great difference in the facility with which it is cured, in different cases, could not fail to arrest the attention; for although the disease, in some instances, completely answers the worst descriptions given of it by authors, and even mercury itself fails to remove it; yet all will agree, that the great majority of cases yield to this remedy, and that it often happens, that bad cases are cured by apparently a very inadequate portion of it.

These discrepancies no doubt suggested the opinion, that there were several kinds of the syphilitic virus; but the grounds of distinction among these seem to me unsatisfactory.

Mr. Abernethy, to whom medical science is so much indebted, defines syphilis by observing, that "the constitutional symptoms of syphilis are generally progressive, and never disappear unless medicine be employed;" and, "that they are generally relieved under an adequate effect of mercury on the constitution."

If the symptoms of true syphilis could be distinguished from those of the spurious disease or diseases, by any well defined difference in their external character, and not solely as they appear generally to have been, by their constant progression and resistance to every other treatment but the mercurial one, the necessity of such a division would be obvious, even at the present time, when both of these last statements are opposed by the non-mercurial cures by the army medical officers, and other facts in the history of the disease to be immediately adduced.

Mr. Abernethy himself, however, who has adopted the distinction of syphilis and pseudo-syphilis, explicitly acknowledges, that it is impossible to fix upon any diagnostic symptom which can enable us to mark a difference. It is therefore obvious, that the distinction has been formed solely for the purpose of separating diseases that may be cured without mercury, from such as cannot; and that the nature of the affection cannot be ascertained, until that remedy be employed, and its effects observed.

In treating of pseudo-syphilis, this author remarks, that "the fictitious disease in appearance so exactly resembles syphilis, that no observation, however acute, seems to be capable of deciding on its nature."

Mr. Abernethy, indeed, attempts to distinguish the true from the spurious disease; but it is evident that the only ground on which he relies, is the effect produced by mercury, and later authors might be quoted to the same purpose. If this remedy was innocuous, such a mode of forming a diagnosis might be safely admitted; but as it not unfrequently has deleterious effects on the constitution, such practice must often be attended with unnecessary suffering to the patient, and much perplexity to the practitioner.

As we thus see an author of distinguished eminence, and of extensive experience in venereal diseases, acknowledging the impossibility of distinguishing between syphilis and pseudo-syphilis, by any other mode than the future contingency of a mercurial course, the salutary termination of which is by no means certain, and which, on all hands, must be allowed to be a severe test for the patient; it may be presumed that this division is neither founded in nature, nor accompanied by any practical advantage.

There are other diseases arising from specific contagions, in which as great a diversity of symptoms occurs as in the cases called syphilis and pseudo-syphilis, yet it is known that they arise from the same virus, however it may vary in its effects; thus, there is as much difference between a mild case of small-pox or scarlatina, and a severe one, as can occur in syphilis; and the effects, local and constitutional, of the animal poison absorbed in dissections, are at least equally various, although of much shorter duration; and these examples are exactly in point in another respect, inasmuch as their mildness or severity do not depend on the kind of virus or contagion applied, but on some peculiarity of constitution, the nature of which, it must be confessed, often cannot be discovered, although it is sometimes sufficiently apparent.

The phlogistic diathesis, and especially that state of the system induced by a frequent and liberal use of intoxicating liquors, certainly contributes both to a greater liability to the contraction of the venereal poison, and to render its effects more obstinate and severe; and, accordingly, in naval practice, where the source of infection can be more easily traced, and the habits of individuals more exactly ascertained, than in most other situations, I have often had occasion to contrast the effects of the same virus in different subjects, as very generally confirming this. I have also repeatedly ascertained the same woman to have infected several individuals in quick succession, in some of whom, the primary and secondary symptoms of syphilis followed; while others had gonorrhœa with swelled testes;

and the severity of the disease very exactly corresponding to the habits of the patients.

The scrofulous diathesis also, is generally supposed to have an influence in many diseases, and although sometimes obscure and of difficult cognizance, its existence may often be ascertained by the well known external characters; and all the writers on venereal diseases concur in stating their obstinacy when it is present; indeed this might *à priori* be expected, as these diseases have considerable analogy in some respects to each other. In the few fatal terminations of syphilis which I have witnessed, this diathesis was well marked: but it was doubtful in those cases, whether the event was more to be attributed to the disease, than to the mercury with which the patients had been largely and repeatedly imbued.

The pernicious effect of mercury, described by some authors, in superinducing a peculiar irritation of the system, sometimes attended by the erythismus mercurialis, during the continuance of which it possesses no power to arrest the progress of the disease, but, on the contrary, is said to convert the existing symptoms into other equally dangerous affections, not to be distinguished from the original ones, is another source of painful uncertainty. It chiefly occurs in those cases where repeated courses of mercury have been used, and of course the first step in the cure is the omission of the remedy.

An examination of the historical evidence, on which the American origin of lues venerea has been founded, would exceed the limits I have assigned to these observations; but that the disease became very prevalent in Europe, and much attracted the attention of medical and other writers, soon after the arrival of the companions of Columbus from Hispaniola in 1493, and was then, for the first time, imputed to infection from impure coitus; seem to me to be the amount of all the evidence of its importation from that quarter.

The belief of the foreign origin of the disease, has had much influence on the opinions entertained of its nature, and particularly as occasioning the effects of ordinary causes on the genital organs to be overlooked. It cannot be denied that these organs are as susceptible of disease as other parts of the body, and that inflammatory action should produce in them a *virus sui generis*, and capable of producing disease when applied to another, is perfectly analogous to what is known of some other morbid poisons of spontaneous origin.

The vaginal discharges of women, in whom no venereal poison can be suspected, are said to be sometimes so acrid as to cause ulceration of the parts with which they come in contact; and that this matter applied to the glands or prepuce of a healthy person, should inflame or ulcerate these parts, or be absorbed, and induce a peculiar train of symptoms, is quite consistent with what is known of morbid poisons in general.

When, however, an author of Mr. Abernethy's acknowledged accuracy and experience asserts, that he has known "both gonorrhœa and ulcers occasioned by connexion with persons who had no syphilitic disease," and that "gonorrhœa arising under the same circumstances, is so common as to need no exemplification;" it seems almost superfluous to adduce other proofs of the disease arising spontaneously. In treating of pseudo-syphilis, he farther observes, "it may be right, however, to remark, that there are cases which would induce the belief, that ulcerated sore throats, eruptions and nodes on the bones, similar to those described, may occur from a general disturbance of the constitution, without the absorption of any infectious matter;" and, that "some species of animal matter, which are not the products of disease, are, nevertheless, capable of exciting it in others."

If, indeed, the structure and functions of the organs, with the circumstances so often preceding and accompanying the origin of venereal affections are duly considered, it becomes rather a matter of wonder, that diseases of the genitals do not occur more frequently, and terminate in ulceration, independently of the application of any morbid secretion; and if the latter, however formed, is applied, the nature and condition of the parts, under these circumstances, are well adapted for its absorption.

In support of the opinion that venereal diseases are indigenous in every country, I may be permitted to observe, that I have witnessed gonorrhœa in a native of New Holland, at a great distance from any British settlement, and in a situation entirely precluding the possibility of his having either directly or indirectly acquired it from any European or other foreign source; for the population of that country is extremely thin, and each tribe lives so completely isolated, that they often have no knowledge of the language, or even existence of their nearest neighbours.

A difference of opinion still exists as to the identity of the virus of syphilis and gonorrhœa; but the latter is, I believe, every where of much more frequent occurrence than syphilis.

The history of the disease at the island of Otaheite, where it has undergone a remarkable revolution, disproves, on a large scale, the opinion of the undeviating progress of syphilis, unless opposed by a specific remedy; and also shows, that gonorrhœa may exist in a large community without inducing it.

This island, as is well known, was discovered by Captain Wallis in the year 1767; but, as the natives were hostile, and he remained only for a short time, it is probable that his ship's crew had too little intercourse with them, for ascertaining whether the disease existed in the island at that time; his people, however, did not contract it. It was subsequently visited at different periods, two or three years afterwards, by the celebrated Captain Cook, and the French circumnavigator Bougainville, both of whom found the disease to be very prevalent; but as their relations are confined to a general statement of

the fact, it is impossible to decide by what form of it their crews were affected. During a succeeding period of about thirty years, the island was visited by few ships; all of those, however, whose voyages have been published, report that their crews were infected, and that the disease continued to make great ravages among the natives.

His majesty's ship Porpoise, of which I was surgeon, visited the island in 1801, and remained for three months. From the accounts in voyages, and the personal reports of some missionaries, who had resided there for several years, there was much reason to fear that our people would suffer from the disease, and, accordingly, precautionary measures were recommended to be adopted by the captain, which were, however, soon found to be unavailing, and were abandoned after the first week of our visit.

The connexion of our people with the native women immediately became unlimited, and probably two-thirds of the whole of the young ones, at that time on the island, were at various times on board.

During the first month, none of the crew contracted any venereal disease whatever; and in the remaining part of our stay, only three of them were affected with gonorrhœa.

In a second visit, in the following year, after remaining two months, and one at the neighbouring island Eimeo, thirty of the crew contracted gonorrhœa, but no other form of the venereal disease appeared among them, nor did any secondary symptom supervene. Only one case of swelled testis appeared, in a person much addicted to inebriety.

It is certain, that in neither of our voyages, did our ship import any venereal disease, as the people submitted to a minute inspection ten days before our arrival; but in the interval between our voyages, a small vessel had arrived, and was wrecked on the island; whose crew, amounting to twenty-one, we found living on shore, and one of whom brought a severe gonorrhœa with him. This sufficiently accounts for the great increase of that infection since our first voyage.

The prevalence of scrofulous tumours and ulcers seemed to me to have misled former reporters respecting the ravages of syphilis; as, at first sight, these appear to be uncommonly frequent, although a minute examination would probably show that they are not much disproportionate to the numbers affected in Europe; for the scanty dress usually worn by the natives is ill calculated for concealing whatever external disease they are affected with.

The total exemption of the natives from any other form of the disease, and the opinion at that time entertained by the best writers, of the nature of syphilis and gonorrhœa, the first of which was universally believed incurable by any remedy but mercury, and the last to be only a topical affection, incapable of inducing the constitutional disease, seemed to me to prove, that syphilis had never been introduced into the island, and that former navigators had met with gonorrhœa only, which (so fluctuating are medical opinions) was in their time deemed capable of inducing all the symptoms of syphilis.

Accordingly, in some observations on this subject, which were published in the Edinburgh Medical and Surgical Journal, I was at some pains to maintain this opinion; but, since that time, having fortunately met with the late Captain Colnet of the Royal Navy, an officer of accurate observation, and very extensive information, who accompanied Cook in two of his voyages, and who decidedly testified, that he had witnessed chancres and buboes, as well as gonorrhœa, in many of their crew at Otaheite, that opinion becomes no longer tenable; and the only admissible conclusion now is, that syphilis, in the space of about thirty years, had disappeared from the island.

It cannot be believed that the crew of the Porpoise could have escaped the infection of syphilis, had it existed in the country, after such unlimited intercourse with the women as has been stated; nor that the latter, who have no regard for chastity, would be restrained from such, on account of their being infected.

After a careful inquiry, in many excursions throughout the island, accompanied by a missionary well acquainted with the language, I was satisfied that the inhabitants had never used any remedies except salt water and cocoa-nut milk, occasionally as a purgative, and that the great diminution of the population which had taken place, was to be ascribed, not to any infection from Europeans, but to a fever of an intermittent or remittent type, and dysentery, which had been long prevalent, and very fatal, and to their own practices, of which I have given some account in the paper alluded to.

The mode of cure so successfully adopted by the medical officers of the army, by simple external applications, a rigid antiphlogistic regimen, including a complete state of rest in both the primary and secondary stages of syphilis, have been so fully detailed by them, that it is not necessary to repeat them here. The character of these gentlemen, and the publicity of their practice, entitle their reports to the utmost confidence; and it will be principally to their exertions that the profession and the public will owe the benefits that must ultimately accrue from a pursuit of the inquiry they have so zealously carried on.

Whether the use of mercury may be safely superseded altogether in this disease, will require a large accumulation of experience to determine; in the mean time, where the antiphlogistic treatment can be safely adopted, and effectually followed, there can be no doubt that it will be equally successful in private practice; but as the same rigid observation of rules cannot always be expected, it is probable that the general results will be less favourable than in hospitals, or in military and naval practice.

From the London Medical Gazette.

ON THE APPLICATION OF MERCURY TO VENEREAL COMPLAINTS. By S. D. Broughton, Esq.

To the Editor of the London Medical Gazette.

Sir,

If the following very small and humble addition to the mass of evidence and argument already before the public, in various works, can be considered in any way tending to correct an erroneous principle of practice, singularly prevalent in the present improved state of surgical science, it cannot be more advantageously placed than in the columns of the Medical Gazette, the weekly receptacle of reports and criticisms of a strictly fair, sound, and authentic character, and on which the profession and the public may safely rely.

Usually a mine of prejudice has been ready to explode when any *anti-mercurial* doctrines have been broached; and in attempting to disturb theories sanctioned by age, and rendered orthodox from ancestorial experience, the curse of modern heresy often attaches itself to the avower of that which many regard rather in the light of rash innovation than improvement.

I will not here dwell upon the often-told tale of the origin and progress of lues venerea, and the *blessing* conferred upon suffering humanity by the introduction of a supposed *specific* check to its ravages, in the form of mercury. Both bane and antidote have gone hand in hand together, during more than three centuries; nor is it my purpose to repeat the several well-known efforts made, from time to time, to lay the offspring of impurity, by the substitution of milder measures than such as are afforded by extensive and long-continued mercurial applications. These efforts have, indeed, generally fallen in time into disrepute, and the old remedy has been fondly and pertinaciously adhered to; the public has been taught to distrust the one, and to consider caution, safety, and security, as the sure recommendation of the other.

I cannot glance at these successive efforts without offering a remark (with which, I believe, well-informed, experienced, and judicious practitioners, will generally coincide,) that Mr. Rose's late introduction of an anti-mercurial treatment (though some, perhaps, may consider it as a failure) is one of the greatest improvements in modern surgery, has made the most general impression, and imparted the most useful direction to practice, of which the pathology of the present century can boast. I also consider Mr. Rose's doctrines to be further valuable, upon the ground that they do not inculcate the necessity of hunting after one specific remedy as a substitute for a discarded specific; but that they tend, on the contrary, to lessen the estimation so long cherished of a dogmatical practice, introducing in its place a pathological theory and remedial measures, built on a far more rational foundation.

These doctrines have guided my practice some years, and experience has taught me not to distrust their truth, safety, and value. I have not allowed myself to be scared by imaginary dangers and terrors into the adoption of an ancient dogma, too often followed upon the ground merely of *suspicion* and *probabilities*, when the alternative was the use of a powerful mineral—at the best more or less a positive evil—the ultimate mischief of which, past and present history show to have been, and still is daily being, confounded with the effects of venereal poison, sometimes extending beyond calculation and the chance of recovery, from its destructive ravages upon the constitution.

I aver that mercurial saturation tends to the destruction of mucous membranes, the removal, by morbid absorption, of soft parts, and the disorganization of the osseous substance.* The *mind*† itself has suffered, the constitution received a baneful impression, and pulmonary consumption‡ has not unfrequently terminated the patient's earthly career, when the system has undergone mercurial saturation; while the wretched victim of imbecility, or imprudent rashness, has been commonly reported (with ill-timed levity) to have died of "*the breeches fever.*" Is it not better that we should

"———rather bear those ills we have,
Than fly to others that we know not of?"

I do not, however, contend for the entire abolition of mercury in venereal complaints; like the abolition of slavery, it must be done with care and caution, from regard both to the moral and physical constitution.

Though "custom be the plague of wise men, and the idol of fools," the deep-rooted prejudices which it implants require gradual

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* A young gentleman went through a full course of mercury: symptoms of phthisis pulmonalis followed repeated inflammatory attacks of the chest, and several deep holes were formed in the forehead, in the manner called *corona veneris*, but more properly should be *corona mercurii*. This patient did not die, but his head is marked, his constitution debilitated, and he is liable to sore throat and acute catarrhal affections, and has been obliged to pass much time in the South of Europe, to the detriment of his professional advancement in his own country.

† The brother of a fellow-student of the author, constitutionally strumous, went through a full course of mercury, and in a few weeks he was placed in a private madhouse.

‡ A respectable unmarried tradesman, in the city, 30 years of age, went through a full mercurial course. Impaired digestion, irregular bowels, symptoms of phthisis pulmonalis, and diarrhœa, followed. He was removed to the sea-side, and there died of hydrothorax, &c.

A young nobleman used mercury to a very considerable extent. Consumptive symptoms, &c. ensued; he was sent to the South of Europe, and there died.

steps to eradicate them; and there may occur certain cases wherein a *judicious* application of mercury will be serviceable and inoffensive. But Mr. Rose's mass of evidence has shown how easily we may wean ourselves of the practice, and that the suspension of the mercurial plan is a bug-bear, the fear of which has intimidated too much, and been carried unnecessarily far. At the same time it appears to me, that the adoption of mercurial remedies is more frequently the act of temerity than is its rejection, at least as it is frequently applied. And I trust it is not extravagant to believe that *Mercury* is often more to blame than *Venus*, or that the destroying sword of the *god* does more execution than the insidious blandishments of the *goddess*.

These remarks have been elicited, not only from having repeatedly observed the safety of an antimercurial practice, but also the frequent terrible consequences of the contrary method; consequences which I do not hesitate to declare sometimes far, very far, exceed what it is possible to conceive from the progressive steps of venereal taint in the constitution. Then is mercury so mild and safe a remedy in its action that it may be indiscriminately used in *all cases of suspicious sexual intercourse?* Independently of otherwise removing the complaint possibly, even if suspicion be justly formed, is no time to be allowed to give the disease fair play, and declare its nature and character? Is no account to be taken of the many little constitutional and local circumstances which aggravate an excoriation, ulcer, or bubo,—or produce some cutaneous eruption, easily removed by a little patient care and judicious treatment, without saturating the system with mercurial ointment and pills? Yet such is a very common practice, especially with *general practitioners;* so that amongst high and low, rich and poor, a *sufficient course of mercury* is generally recommended to the patient; and he must get out of the scrape as well as he can—if matters go wrong, by aid of sarsaparilla, the sea-side, mild climate, &c. &c. Then, sometimes, it is thought, the *poison lurks in his bones*, or his throat (perhaps extensively ulcerated) shows *that he has not had a sufficient quantity to destroy the venom, and therefore a little more mercury will do for him* (and quickly, too, in a scrofulous habit,) *when Nice or Naples will, probably, set him to rights again, and restore his constitution;* and if it does, he may esteem himself very lucky to return with a sound skin and whole bones, &c.

Now these are not imaginary cases, and were it necessary, which it is not, a multitude of instances might be cited in proof, many of which have passed under my personal observation. Many cases might be shown to have done very well without mercury; many in which this remedy was totally unnecessary, though not, perhaps, injurious to the health; and many in which the abuse of mercury has produced distressing and protracted mischief; and, in some instances, ultimate dissolution, from a train of superinduced disorders.

On the other hand, few, I believe, if any cases can be authenticated, in which the venereal disease (as it is termed,) when left to itself, has produced any such consequences as those to which I have alluded above, without the aid of mercury.

The common *cant* is to attribute cases which get well without mercury, to what is called *pseudo-syphilis*, a term which is perfectly gratuitous.

Those whose prejudices are invincible, believe that all cases healed without mercury cannot have been venereal. With the example of Portugal before us, and some other countries, and the long trial which Mr. Rose gave the anti-mercurial system, I conceive such inferences to be wholly unwarranted. I have taken about *three hundred and fifty* recorded cases of ulcers of the penis, admitted and treated in the regimental hospital of the 2d Life Guards, *one hundred and fifteen* of which appear to have used mercury in different forms and proportions, and for different periods of time; so that about *two hundred and thirty-five* cases of primary symptoms, following sexual intercourse, have been healed by other means than mercurial remedies, as well as many not in the list.

The number of secondary cases of symptoms following the primary venereal disorder during the same period, amounts to about *twenty-two out of three hundred and fifty.* And, upon following up the narratives of these, it appears, that the majority were generally simple cases of *lichen*,* which got well without mercury, and in no long time. The greater part of those cases which were protracted, and attended with ulcers of the throat, pains of the limbs, nodes, &c. were originally treated with mercury in the hospital, and the rest showed that mercury had been clandestinely procured at some period or other during the progress of the complaints. The simple cases of lichen, &c. were chiefly found amongst the men *not* treated with mercury, *while the most protracted and troublesome cases occurred with those who had been fully subjected to its*

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* The following case may serve as an example of these in a healthy constitution, wherein no morbid diathesis or casualty modifies the symptoms. E. M. a private soldier, was admitted, August 10, 1827, with a deep sore on one side of the glans penis, following recent connexion. He was put upon low diet, and saline aperients; and the sore dressed with lint, dipped in the *lotio nigra*. In three weeks the sore was completely healed. Three weeks afterwards, an eruption (like *lichen*) covered his body, without preceding fever. This was September 9. He took *sarsaparilla*, and on the 27th he was discharged to his duty perfectly cured. In some of these cases small doses of the oxymuriate of mercury have been combined with the sarsaparilla, when the case assumed a chronic form, and did not become quickly cured; but in most cases it was not used, and in none but in a very small degree.

*operation.** Since the use of mercurial saturation has been suspended, no cases have occurred to throw any distrust upon the propriety of the practice; and the few cases of secondary symptoms were generally mild and trifling compared with those which followed mercurial treatment, and readily yielded without mercury.

I do not pretend to enter upon any nice discriminations of practice, or to draw a line between cases requiring and cases not requiring mercury, nor to describe such as mercury will aggravate. Indeed, I am aware of no satisfactory rules to guide the practitioner in this respect, but those which he himself derives from a sound judgment and experience. I wish merely to assist in establishing the fact, that venereal sores admit of treatment without mercury and without cause of alarm; the secondary evils of mercury being usually far more destructive than those which arise from venereal taint, and that the one case is often mistaken for the other. Consequently, it appears to me, that there is more security in omitting to push a mercurial course than in adopting it; that comparatively few cases occur requiring mercury; that the perils of mercury are sometimes manifold and terrible; that at all times it entails more or less personal inconvenience and annoyance, and frequently leads to a train of ultimate symptoms, from which erroneous inferences are made, and an useless, if not mischievous practice adopted, the effects of which cannot be foreseen, and their limits no man can calculate upon.

In my Dispensary practice I have had frequent occasion to observe the great danger of pushing a course of mercury, when the patient is not under the surgeon's control as to diet, temperature, &c. An error made in the treatment of sores on the penis with persons going about, and exposed to sudden changes of temperature, to cold winds, or wet, is too often irretrievable. The labouring classes in London, perhaps not living on the best diet, nor possessing sound constitutions, exhibit frightful examples of the imprudent use of mercury; the effects of which, from some cause or other best known to themselves, there are practitioners (chiefly in private practice) who are constantly disposed to attribute to syphilitic action and deficient mercurial saturation. This propensity, indeed, I remember once to have heard very satisfactorily accounted for in a medical debating society, by a candid avowal, that if the anti-mercurial mania continued to spread, "*it would be ruin to the apothecaries and general practitioners.* Therefore, the inference drawn from this *liberal* sentiment was, that it is better to be on the SAFE side, and not to hazard the adoption of modern heretical opinions against the "*wisdom and experience of our ancestors.*"†

My attention has been particularly drawn to the subject of this paper lately, from the circumstances of the following case, affording a tolerable sample of the effects which the *blessing* handed down to us by our forefathers is capable of producing.

Case 1.—B. R. æt. 25, had gonorrhœa, with phymosis, in February 1824, and slight enlargement of the inguinal glands occurred on one side of the body. Extensive superficial ulceration was discovered when the prepuce could be slipped back; the sores healed in less than a month. Six weeks from his first presenting himself were devoted to taking twenty grains of blue pill daily, and mercurial frictions were employed for three weeks. Violent salivation took place occasionally, and he was long under its influence. In three months his throat was ulcerated, and before the expiration of this period the mercury had been resumed, and only spared from excessive salivation. The palate, tonsils, and pharynx, were involved in ulceration. Subsequently he went into a general hospital, and remained there nearly a year, mercury being again tried. When discharged, the ulceration had ceased; but soon afterwards violent pains took place in the limbs, and in about a month he was re-admitted into the hospital. Again mercury was administered, salivation being produced, and the teeth getting loose. Hot baths and sarsaparilla were used latterly in another hospital, and in seven months he was discharged from it, relieved by this treatment. Subsequently he came under my care at the St. George's and St. James's Dispensary, complaining of pains in the limbs, a node on one shin, and much debility and emaciation. His breath was highly tainted, his voice snuffling and inarticulate, the ala nasi partly drawn on one side from ulceration within, and the integuments covering the nostrils looked of a livid reddish colour. He expectorated a profusion of saliva, with thick mucus and purulent matter. The tonsils were large, red, and firm; and the back of the pharynx was in a state of ulceration. A quantity of loose bone rattled in the nose interiorly, but could not be removed with the forceps; and the uvular processes were somewhat carious. He had great difficulty in swallowing, and his bowels were very costive.

On the 15th of January last, I commenced a course of sarsaparilla with him. Diluted muriatic acid was directed to be thrown up the nostrils with a syringe, and the throat gargled with infusion of rose leaves, myrrh, and honey; and the compound rhubarb pill was taken twice a day. His present situation is greatly ameliorated, though sufficiently wretched. Large masses of bone have come through the nostrils, and his throat is better.

The following case may be considered interesting, as one often attributed to the remains

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* And such I have always found to be the case elsewhere.

† It is, however, to be hoped, that the gentleman who avowed this motive was as much in joke as the wag who declared that the first standing toast at the College of Physicians dinners was always, "*a slow fever,*" with three times three!

of venereal taint in the system, or deficient use of mercury, and which many would probably have treated with a full course.

Case 2.—In Sept. 1827, a military quartermaster put himself under my care, complaining of having had shooting pains in the head from May preceding, and sores upon the scalp, which first appeared in April. Ulceration also extended over the soft palate, uvula, and tonsils. His body was much emaciated, his tongue covered with thick fur, his pulse quick, his appetite bad, and deglutition very difficult. A copious discharge of phlegm, purulent and mucous matter, was constantly going on. About two years previously, he was treated for an eruption of reddish brown patches, slightly elevated, to which he had of late been subject periodically; the eruptions sometimes dying away, and then returning at subsequent periods, and shifting its place; the head, shoulders, and limbs, being principally affected. Latterly, some of these patches ulcerated, a portion of them drying up in crusts, and a few extending into open sores, from the size of sixpence to that of half a crown, and preceded by pains in the arms and shoulders. Just before the eruption first appeared, a superficial sore on the penis, inside the foreskin, healed under the application of an astringent wash, after three weeks' duration, leaving no vestige behind. The eruption was unaccompanied by fever, nor were his appetite and appearance bad;—his bowels were regular. The eruption was treated with the decoction and extract of sarsaparilla, moderate doses of the oxymuriate of mercury being given daily, and five grains of the blue pill twice a day. The red precipitate ointment was applied to the sores until they assumed a clean granulating appearance, and then a solution of blue vitriol in camphor julap, healed them without difficulty. The oxymuriate of mercury, and the blue pill, were discontinued after one month's use; and in a fortnight he was perfectly relieved and well, his mouth being affected. The sarsaparilla had been taken at intervals from the commencement of the eruption. For some months during the progress of this complaint, he neglected himself, and was exposed to vicissitudes of weather and temperature; and there was reason to believe he had taken mercurial pills abundantly from a druggist. When under my control, from the 9th September, 1827, suffering from fever, and the state of ulceration in the throat (as described,) together with the sore on the scalp, and with costive bowels, he was put upon a milk diet and broth, and the following draught given every four hours:—℞. Misture salinæ ℥iss.; liquor. ant. tart. ℥j.; magnesiæ sulphatis ℥j.; spirit. ætheris nitrosi ℥ss. ft. haust.

The throat was gargled frequently with solution of nitre in barley water, sweetened with honey, to which a little tincture of myrrh was added, and fumigated by an inhaler; and the hot bath was occasionally used. The compound colocynth pill was also taken at bed-time when required. The sores on the head were dressed with red precipitate ointment; and one large ulcer, in a very sloughy state, upon the crown, was poulticed with linseed meal. The pharynx exhibited a state of inflammation and tumefaction round the ulcerated parts, which were covered with a white viscid substance; and his voice was snuffling and inarticulate. In ten days the velum palati exhibited a circular orifice, about the size of a sixpence, from a slough which had been gradually formed and cast off just above the uvula. The ulceration then extended in a straight line, right and left, from this central point, removing the uvula and velum palati.

On the 19th of Sept. (ten days from his admission,) the febrile symptoms being subdued, the decoction of sarsaparilla and extract were given, with a small dose of the liquor hydrargyri oxymuriatis, thrice a day. The decoction and oxymuriate were, however, omitted in about a week, as they disagreed with the stomach, and were difficult to swallow.

As the sores got into good healing condition, the shooting pains of the head subsided. The mistura quininæ, in small quantities, was substituted for the sarsaparilla; and as the sloughiness of the throat assumed a healthier appearance, the decoction of bark, with sulphuric acid and tincture of capsicum, replaced a gargle of the mel æruginis and lime water. On the 4th of Oct. the quinine mixture agreeing with the stomach, was strengthened from four to five grains in each dose, with twenty drops of the diluted sulphuric acid and sirup. In the mean time, though the appetite and digestion had but little improved, and he was still very weak, the ulcerations were every where improving in appearance, and cicatrising at their edges. By Nov. they were healing very fast, but he complained of being choked with phlegm. The sarsaparilla was again resumed, in less quantities, and gradually augmented; and the quinine mixture left off. The sores on the scalp were nearly healed, under the application of solution of blue vitriol in camphor julap.

On the 21st of November he returned to his duty, when all ulceration was perfectly healed, the tongue clean, the appetite restored, the bowels regular, the countenance healthier, and the bodily condition generally improved.

I supposed that the loss of the velum palati and uvula would greatly impede the speech; but as soon as the throat healed, the voice became again articulate; so that these parts may be presumed to be more subservient to deglutition, by guiding and directing the passage of morsels of food and liquids, than to speech, although the latter office has been assigned to the uvula.

The following case shows the occasional influence of excessive mercurial treatment upon the system, and the removal of an ulcerated state of the throat consequent to it without mercury.

Case 3.—S. S. æt. 23, a dispensary patient, under my care in February, 1823, with pains in the joints, superficial and extensive ulceration of the pharynx, marks of an eruption over the body, a strong mercurial odour in the

breath, and the gums evincing mercurial influence. He had also a furred tongue, emaciated appearance, and bad appetite. A recent sore appeared beneath the foreskin of the penis, which spread quickly, but not deeply.

It appeared that somewhat more than a year ago he had gonorrhœa, and a bubo in each groin, with a sore on the side opposite to that of the last mentioned, which healed in a few weeks, and left no mark. He took mercurial pills daily, and suffered excessive salivation for some weeks. Between three and four months afterwards an eruption spread over the body and limbs, and the throat became ulcerated. He went into an hospital, where he passed through a short course of mercurial friction, and he quitted the hospital with the throat healed. It was shortly, however, brought into the same state of ulceration as before, and at this period he came under my care, at the St. George's and St. James's Dispensary, with inflammation round the ulcerated portions of the pharynx, and in the state above described. The *lotio nigra* was applied to the recent sore of the penis, and it healed in less than three weeks. The decoction of sarsaparilla and extract were given freely every day, and the throat was gargled with astringent and stimulating solutions. Under this treatment he recovered his health and strength, and was finally discharged with the throat healed, and otherwise well.

The effects of mercury upon a naturally delicate constitution, and the removal of primary and secondary symptoms, without mercury, are shown in the subjoined example of two distinct venereal complaints in one person, and at different periods.

Case 4.—J. H. æt. 20, a dragoon, went through five weeks' course of mercurial friction, attended with severe ptyalism, during which period a sore on the penis healed. Eight months afterwards he had violent pains in his limbs, increased at night, with thickening and tenderness of the periosteum in both legs, shortly succeeded by a foul ulcer in both tonsils; and he was emaciated and out of health. These symptoms continued two or three months, during which he used hot baths, gentle aperients, astringent and stimulating gargles, with fumigation from the inhaler, and the decoction of sarsaparilla and extract. His diet was light, and principally farinaceous at first; and he finally quitted the hospital in restored health.

After his discharge, he again contracted sores on the penis, from impure connexion, and these healed in about five weeks, with astringent lotions. The sores were not deep, and their edges were nearly even with their centres. Pains of the limbs, but less violent than the last, together with a slight appearance of *lichen*, followed in a few weeks; and recourse was again had to hot baths and sarsaparilla; and he was shortly discharged cured, and went to his duty. In the winter, however, pains like rheumatism returned, and soon yielded to hot baths, and occasionally a few small doses of calomel and opium at night.

The following case exhibits secondary symptoms, following sores on the penis, which were treated with mercury, cured without mercury.

Case 5.—W. B. æt. 23, a dragoon, contracted sores on the penis from connexion, which he concealed, taking mercurial pills largely every day, from an empiric. In three weeks the sores healed, and he was much salivated. Shortly afterwards, he was admitted into the regimental hospital with fever, extensive ulceration of the palate and uvula, difficult of deglutition, disordered health, and emaciation. An eruption of distinct elevated tubercles spread over the body and limbs, and upon the scalp, some of which died away, and others, in appearance like *rupia*, advanced. Saline mixture, with full doses of tartarised antimonial wine, and hot baths, subdued the febrile symptoms. The throat was washed with acidulated astringent gargles, and fumigated by means of an inhaler with cinnabar. The voice was snuffling and inarticulate. Subsequently to the subjection of the fever, he was prescribed the decoction of sarsaparilla and extract, with small doses of the liquor arsenicalis, three times a day. The sores were poulticed where they were large and foul, and others dressed with red precipitate ointment, and, finally, with solution of blue vitriol in camphor julap. Under this treatment, and a suitable change of diet, he recovered his health. Having been admitted on the 16th of June, 1821, he returned to his duty on the 25th of October following.

The next case which I shall adduce, is one of secondary symptoms aggravated by mercury.

Case 6.—E. C. æt. 24, a military musician, had a superficial sore on the frenum, which healed in less than a month, with astringent lotions. About five or six weeks after, he was exposed to wet weather, with inflammation of the throat, and an ulcer formed in each tonsil. He procured gargles and mercurial pills from a druggist, and became very much salivated. On the 21st of June, 1824, he was admitted into the regimental hospital, with an eruption of red patches all over the body, preceded by fever, and the throat extensively ulcerated. He was much emaciated, had a furred tongue and bad appetite. The ulcers in the pharynx appeared sloughy and spreading, involving the uvula and tonsils. The fever was treated with saline mixture, and tartarised antimony, and Epsom salts. The throat was gargled with bark and alum, and as there was pain, a plaster of soap and opium was applied to the throat externally, and the inhaler was used to fumigate the ulcers. He occasionally used hot baths. In about a week, the febrile state gave way, and left much debility. The fever diet was then changed for one of good broth, milk, &c. and the saline mixture was changed for the decoction of sarsaparilla and extract. About the first week in July, the throat was perfectly healed, and the eruption gone off, and, in a few days, he returned to his duty. On the 11th of November following, he was readmitted, with an ulcer on the velum palati, which looked healthy and very superficial. A

few scattered reddish papulæ were observed on different parts of the body, which died off with the desquamation of the cuticle covering them. A gargle of bark, myrrh, and capsicum, was prescribed, and the decoction of sarsaparilla with extract, and small doses of oxymuriate of mercury given thrice a day. On the 8th of December he returned to his duty, quite free from ulceration and eruption.

The above six cases are selected from a stock containing many similar; but it is not so much my object to accumulate examples of the points to which I have referred, as to illustrate some of my positions. Instances of the above description have often fallen under my notice in hospital and dispensary practice, and some could be produced from among private patients; and such are doubtless to be found in the records of cases, which must occur to the remembrance of other practitioners. I am induced to believe, both from the foregoing facts and observations, and those which are put forth by Dr. Thompson, of Edinburgh, Dr. Ferguson (late Inspector General of the Portuguese army,) Mr. Guthrie, and others—

1. That all the forms in which venereal complaints present themselves, are to be removed without the aid of mercury; and this is more especially and remarkably the case in regard to the secondary symptoms of the disease.

2. That mercury has formerly been, and frequently is still, used in an unnecessary, indiscreet, and highly dangerous manner.

3. That mercury, *judiciously* and *alteratively* used, is not only an excellent, but perhaps the best remedy in many venereal complaints; nevertheless, a tithe of the quantity anciently administered is generally sufficient, and more than sufficient, probably, to eradicate the primary symptoms; while, again, a tithe of that tithe, or a centime, has been found competent to eradicate the secondary stage of the disease.*

4. That mercury is very far from being a certain preventive of the secondary train of symptoms in any form or quantity.

5. That mercury, when pushed far, induces ulceration of the mucous secreting surfaces, more especially of the inner palate, throat, and fauces, as well as affections of the bones, so exactly resembling those ascribed to true syphilis, that the most experienced surgeon cannot detect any difference. In the hands of the members of the old school, mercury, in fact, creates its own work, by establishing diseases which have too often been confounded with venereal poison, and thereby led to a most dangerous and destructive practice.

6. That the train of symptoms following mercurial treatment, has been found more severe and difficult to remove than that which follows primary venereal sores *not* treated with mercury; and that repeated relapses into secondary symptoms are removed with increased facility every time they occur (as if the disease wore itself out) in cases wherein no mercury has been given.

7. That while mercury, through its *accumulative* power, is the best and most powerful *alterative* ever discovered in numerous inflammations—such as the iritic, the hepatic, the dysenteric, the rheumatic, &c.—and is singularly powerful against that resulting from venereal poison; yet, if given incautiously, it tends to undermine the healthy state of the constitution, to establish, in some instances, and in others to aggravate, constitutional diseases—to increase constitutional irritability—to excite inflammation and ulceration in, and to destroy the mucous textures of the body—to promote morbid absorption and removal of the fatty, fibrinous, and osseous substances of the system—and to induce synovial, albuminous, and serous accumulations in the respective cavities lined with the membranes producing such secretions; although, in moderate doses, mercury tends to remove such accumulations.

8. That the extent and injury to the soft and bony parts of the system, arising from the action of mercury, is far mose dreadful than any primary or secondary effects of venereal poison.

9. That mercury never was a *specific* against the venereal poison, for relapses were constantly occurring during its fullest operation; nor possessed any virtue in the cure of the disease beyond being the most powerful *alterative* in the hands of the medical practitioner; and that the creed so long believed in (to the ruin of the health of multitudes, through mercurial salivation,) of its indispensability towards the cure, and the destruction of the patient if omitted, is utterly false and groundless; facts which can admit of immediate every-day demonstration in the many thousands of the healthiest British soldiers, *who have been easily, effectually, and permanently cured of every stage of the venereal disease, without ever having taken one particle of mercury.*

The bigoted adherence to a belief so false, and so universal, in which the wisest and most philosophic of our profession blindly participated, will be quoted by after ages as a national reproach; and, as it has indeed already done, will, it is to be feared, go far in destroying our confidence in all medical dogmata, or even doctrines, whatever.

10. That mercury is wholly inadmissible in cases of *sloughing* sores of the penis, wherein there is preceding high inflammation and tumefaction of the parts affected, attended with fever; as it aggravates the local symptoms, and increases continual irritation; *and that mercury is inadequate to the cure in such cases, specific contagion being superseded by violent inflammatory action*, which is too rapid in its course

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* Vide Abernethy on his imaginary *pseudo-syphilis*, who cured so many of the worst cases of the disease with so little mercury, that he actually distrusted the work of his own hands, and therefore summoned the trustiest of his brethren of the old school, to vouch for the impossibility of the diseases so treated being truly syphilitic.

to be overtaken by the accumulative power of mercury, or by any remedies but *those which act immediately and directly upon the symptoms of danger.**

The two following cases may render the 10th and last position intelligible, and otherwise illustrate the treatment of such cases.

Case 1.—Dr. Ferguson, of Windsor, (who first drew the attention of the public to the non-mercurial treatment of the venereal disease in Portugal, when he was Inspector General of Portuguese Hospitals,†) attended an officer, in Lisbon, four days after connexion, the whole penis being enormously swelled, of a deep red colour, with malignant looking sores on different parts of the prepuce, and two on the glans penis. He was young, robust, plethoric, and of a sanguine temperament. The skin was hot, the pulse sharp and quick, tongue white, and eyes red, although the patient was living temperately. The catastrophe, Dr. F. well observes, if left to nature, was at hand; or if a few doses of bark, wine, and opium, had been given, his fate would have been inevitable. But he was, most judiciously, treated very differently: *he was blooded largely, the coldest lotions were applied to the penis, he was purged actively with neutral salts, and placed on spare diluent diet.* Under the then almost universal impression among English surgeons, the forbearance of mercury in the above described state, appears to have been as judicious and creditable as it was bold;—perfect success was the reward.

Case 2.—R. S. æt. 22, a dragoon, of robust and healthy appearance, although he had suffered, about a year previously, from typhoid fever, was under the author's care in June, 1826, the weather being very sultry. The penis was much tumefied and inflamed, a large sore on one side of the glans, producing great pain, three or four days after connexion. His pulse was strong and full, amounting to 120, his tongue white, and the skin dry and hot. Copious bleeding was immediately practised, full doses of neutral salts and senna were given, together with one drachm of the liquor. antim. tartar. in a saline draught every four hours, and ten grains of James's powder at night. The penis was kept cool with the saturnine lotion. Next day after his admission on the 11th of the month, the pain and fever were diminished. The sore appeared to be sloughed deeply, and the slough was partly separated on the 17th. The day after, all pain and tumefaction ceased. On the 20th, the slough came away, and left a deep excavation, looking florid and healthy. By this time he had no fever, and was in good health. A poultice of poppy-head decoction and conium had been substituted for the cold lotion, and when the slough came off, the *lotio cupri sulphatis* was applied to the sore. Granulation went on quickly, and early in July the ulcer was perfectly cicatrized. On the 8th of July he returned to his duty.

* It has occurred to the author to notice two distinct examples of destruction of the penis—in one case entirely, and in the other reducing it to a short stump—following the application of mercury to sloughing sores on the penis, consequent to inflammation and fever.

† Vide Med. Ch. Trans. vol. iv.

From the Lancet.

SOME OBSERVATIONS ON THE COMPARATIVE MERITS OF THE DIFFERENT METHODS OF PERFORMING AMPUTATIONS. By George Bushe, M. D., of the Royal College of Surgeons in Ireland, and Assistant Surgeon to the Forces.

It is not my intention to enter into a historical inquiry of the progress and improvements that have been made in this branch of surgery, or to mention the accidents and diseases which require amputation; it is merely my desire to show the comparative merits of circular and flap operations, and the advantages and disadvantages of the different modes of executing them, which, as I shall hereafter explain, will principally depend on the state of the limb, and nature of the malady requiring amputation.*

If we view amputation in a proper light, we shall soon learn that it is an operation of considerable magnitude to the patient, involving him in dreadful suffering, and if not well executed, consigning him to certain misery for the rest of his life. Although these are facts well known to the most humble practitioner, it is by no means uncommon to see a man, who cannot decently despatch the most trivial surgical operation, undertake the performance of amputation. His first object is to girt the limb firmly with a torniquet, (by which immediate death from hemorrhage is avoided,) and

* Nothing can be more empirical, than making disease subservient to remedies; but though truly unscientific, we every day see men who should know better, degrade themselves by following this line of practice. For example: one oculist will bleed, &c., in all cases of ophthalmia; form all artificial pupils on the principles of Gibson, and, in every case of cataract, operate with a needle; on the contrary, another man will use solutions, and ointments, as the only remedies for conjunctival ophthalmia; make pupils as recommended by Cheselden, and even attempt to extract membranous cataracts. In like manner, one surgeon is so devoted to the double circular incision, that he performs no other, though his coadjutor, in the same hospital, is bigoted to the double flap operation, and never amputates but after this manner. But, the unprejudiced practitioner will look to the nature of the case, and adjust means accordingly; for only by thus acting can he be of public utility, and honestly beneficial to himself.

the next, to dismember the unfortunate patient, well bearing in mind, that anatomical knowledge can no more serve him than the best operator, as his great object is to divide every tissue. The vessels being secured, and the wound dressed, it matters not whether the patient has suffered from an ill conducted and protracted operation, or whether he recovers with a sadly formed stump; at all events, the surgeon, who may have thus tampered with human blood, and deserves the scorn of all honest men, obtains amongst his patients a celebrity of the very first rank, for having achieved what to them appears the most serious of all surgical operations. Hence it is, that we every day see men destitute of the slightest surgical dexterity, anxiously looking out for cases upon which they may work a character, thus sacrificing every honourable feeling, and violating all the bonds of humanity; nay, becoming the very workers of cruelty, and stigmatising a most laudable profession, for what? nothing less than sordid ambition. This picture is but too truly delineated, and it is much to be desired that such men would rather employ themselves in obtaining information, which could not fail to excite emulation amongst their cotemporaries, lead the better informed part of the profession to respect them, and compel the public to seek at their hands, that aid which can only be obtained from the well-informed practitioner.

The circulation in the limb about to be removed is commonly restrained by the tourniquet; and to whatever slight deviation has taken place from this established custom, we are principally indebted to Mr. Liston, of Edinburgh, who has written a concise and useful paper on amputation in the Edinburgh Journal; and although I cannot altogether agree with that justly celebrated operator, who, when speaking of the tourniquet, writes as follows: "It is, in my opinion, of no use, and, in many cases, worse than useless;" still I wish to give him every credit for vast improvements in this department of surgery; however, to the former part of his statement I cannot at all acquiesce, but the latter is consonant with my own views. It was inculcated by Mr. J. Bell, that it required considerable pressure to restrain the current of blood through arteries of any considerable magnitude; but this opinion has met with its desert, and has been totally annihilated, particularly by those army surgeons, who had the most abundant opportunities of putting it to the test of experiment; and Mr. Liston has not failed to prove to us, that the pressure of an assistant's finger is sufficient to prevent a column of blood passing through an artery, no matter what caliber it may possess. But whilst in hospital practice, or private life, we can procure proper assistants, and personal safety, during the operation, it must not be forgotten, that the army surgeon on the field of battle, can frequently neither obtain a proper assistant, nor personal safety, during the execution of many hazardous operations, therefore to him the tourniquet becomes absolutely necessary; and, on the same principle, I think Larrey acted judiciously, in securing the inguinal artery with a ligature, before he proceeded to the amputation at the hip joint. In this light, therefore, I look upon the torniquet as a most useful instrument to the military surgeon; but though it cannot be doubted, that where it is employed, more blood is lost during the operation, than when the vessel is compressed by an assistant; this, instead of being detrimental to the soldier in rude health, must rather serve to prevent that excitement, which often succeeds to primary amputation; so that, on this score, the naval or army surgeon can raise no objections to it. But, as I before stated, I entirely agree with Mr. Liston, when he says, "that in many cases it is worse than useless," because the greater part of the returning blood is lost; and as many patients upon whom secondary amputation becomes necessary, are greatly exhausted by suffering, and the duration of disease; the loss of even a small quantity of blood is an object that should be attended to, and avoided as far as possible. Luckily, such cases are the subjects of operation in hospitals and private life, where suitable assistants can be procured, therefore, I would lay it down as a maxim, that, save in the field of battle, the tourniquet should be dispensed with in all cases of amputation. It may not be useless here, to caution those to whose lot the compression of the greater arteries may fall, not to be over desirous to use great force; for it is well understood that a moderate degree of pressure is sufficient to check the sanguineous current; and that nothing can be more painful to the patient, or tiresome to the assistant, than strong force long continued; and further, there is no doubt but that moderate pressure will more certainly curb the arterial circulation; for, from the great elasticity of the larger vessels, they have a tendency to elude force, though directly applied; this fact was fully demonstrated to me two years since, when the brachial artery was consigned to an over anxious assistant, whilst I amputated the arm. In this case the vessel rolled from beneath his fingers, so that I found it necessary to desist, until he again (with more caution) resumed his duty. Finally, the operator should only be satisfied that his assistant perfectly understands how to compress the vessel, but also that he possesses sufficient presence of mind to continue his calling during the operation. I am particular in this statement, from a circumstance that occurred some time since in my own practice, viz. when about to remove a lower extremity, above the knee, I charged a person with the femoral artery, whom I supposed equal to the task; but when I transfixed the limb, he suddenly let go his hold, and the consequence was, an alarming flow of arterial blood; so that the expedition and evenness of the operation were considerably retarded, by want of capacity in my coadjutor, to assist in a common amputation of the thigh.

The double circular insection is that now generally adopted by European surgeons; and though a few years since, considerable exertions were made in France and Germany, and still more lately in Edinburgh, by Messrs. Liston and Syme, to establish the double flap operation, yet, with a very few exceptions, a strong prejudice exists against it, and it is not common, even now, to see hospital surgeons adopt this line of proceeding.* This, at first, might lead the inexperienced to entertain but a low idea of its utility, and to practise the circular operation; but I firmly assert, that this prejudice has not arisen from the defects of the flap operation, but an unheeding attachment to the established mode, or circular incision. The natural feelings of man lead him to form prejudiced opinions on matters to which habit has long accustomed him; but it is to be hoped, that the rising race of surgeons will, in some degree, deviate from the principles of their fathers, and, by strict experimental inquiry, seek improvement in this most essential branch of operative surgery. Thus actuated, I commenced; and it has since been my lot to perform many flap operations in public hospitals and private life, in the presence of men fully competent to judge of their advantages and disadvantages; and the very favourable termination of the majority of these cases induces me now to say, that the double flap operation appears possessed of the important advantages laid down by Messrs. Liston and Syme, and that it is adaptive to the greater number of cases. So deeply am I impressed with these sentiments, that it seems to me a matter of surprise, that before now it has not broken the chains of prejudice, and taken its proper place.

As above stated, the advantages of double flap amputations have been clearly and fully explained by Liston and Syme, therefore I consider it quite unnecessary to enter into a detail of them in this place; save that I feel myself called upon to refute an objection that has been started, since the papers above alluded to were published, viz. that from the great extent of surface exposed, union, by the first intention, is not so likely to take place as after the double circular insection; and hence sinuses and tedious suppuration more commonly follow it. To me this objection appears so ill founded, and to be the offspring of such shallow reasoning, that I deem it unnecessary to occupy more time in opposing it than whilst I write,—that the surface of a well formed flap stump, is less than that of a circular one equally well performed; by the diameter of the angles above and below (or before and behind) sacrificed for the rounding of the flaps; however, I do not hesitate to say, that tedious suppuration, and even sinuses, too frequently follow flap amputations; but these consequences are only apt to ensue when the operator, desirous of making a good stump, has made the flaps too long and pendulous, an error of serious magnitude, but of very common occurrence,* and it is my belief, that adhesion will more frequently follow well executed flap than circular operations, for the cut surfaces can be kept more easily in contact, whereas, after the circular incision, (no matter how well performed,) the soft parts must be more or less stretched, and a cavity must necessarily exist anterior to the extremity of the sawn bone, which will become a reservoir for exuded fluids, that can obtain no depending outlet.

With respect to the best method of performing flap amputations, there has been a considerable variety of opinion, but the differences may be classed under two heads, viz., the propriety of cutting from within outwards, or from without inwards; the former being principally advocated by some French surgeons, especially Lisfranc; and in this country it has met with strenuous supporters in Messrs. Liston and Syme.—The latter method has had its advocates chiefly in Germany, amongst whom may be mentioned the celebrated Langenbeck, but it has also been practised by some of our military surgeons in the peninsular war. These differences require much consideration, and, in opposition to high authority, I fearlessly say, that there are cases where one plan is preferable to the other; and I cannot help thinking, that their misapplication, added to the difficulty of their performance, constitute the chief and true objections to their more frequent adoption. In proof of this statement, I do not hesitate to say, that those who have witnessed amputation at the hip joint, performed in both ways, will side with me when I write, that the limb can be removed with less danger of hemorrhage, where the incisions are made from without inwards, as then the operator has it in his power to secure the vessels before the operation is performed, should the loss of blood demand it. Again, I assert, that the advocates for Langenbeck's method in the thick part of the thigh, have preferred it, because, where they have seen Lisfranc's mode adopted, the integuments have been too short to cover the divided muscles, and this consequence of transfixing, I have observed myself in primary amputations, especially where the limb has been muscular. I have also witnessed a still greater defect in this respect in two cases, (one of which occured to myself,) where, from untoward circumstances, primary amputation had been postponed beyond the usual time, so

* At Guy's Hospital, it is most commonly adopted in respect to the thigh.—Ed. L.

* When I perform the double flap operation, I make the flaps shorter than I have observed in the operations of others; but I always retract the soft parts at their bases, as far as possible, by which expedient the extent of surface is diminished, the stump rendered more plump, and the cut extremity of the bone, or bones, more completely imbedded in muscle.

that the tissues had become tumefied from serous and lymphatic effusions; but, in all such cases, by first dividing the integuments and fascia with a scalpel, they can easily be retracted by an assistant for the extent of an inch or more; then the transfixing knife may be employed for the division of the muscles, &c., with safety, expedition, and success; but in cases where the bulk of the extremity is not great, nor, on the contrary, emaciated or flaccid, (which is oftentimes the case in old wornout persons,) and the parts to be divided are in a healthy condition, transfixing has, in my hands, been most successful; and, on looking to my notes, I find that I have performed eight amputations after this manner.

I have now said much concerning flap operations, but I would not wish to be understood as appearing altogether to condemn the circular incision; for within the last month I have amputated the arm of a delicate female, after the manner of Dupuytren, viz. with a single circular incision, because it was much emaciated, and very flaccid. And from the success of this and another case, that I operated on in the same way, I have but little doubt as to the superiority of this method in flaccid and spent members; for when the soft parts have thus degenerated, union by the first intention rarely takes place. The double circular incision is generally abortive; I have seen more than one case where bad suppuration has followed it, the stump open, and the bone protrude, though here has been abundance of skin, hanging loosely over the suppurating surface. After the double flap operation, the consequences are nearly as unfavourable, and should the wound heal, the stump will be pendulous and flabby. When this operation by the single incision is determined on, an assistant should retract the soft parts to their greatest extent, before the knife is applied; and after the bone is exposed, the muscles should be retracted still farther, before the saw is employed. After the removal of the limb, the operator will find it almost impossible to bring the edges of the divided integuments into coaptation; but this is by no means necessary; "it is directly hurtful," and, indeed in general it will be found sufficient, through the medium of one or more adhesive straps, to give the lips of the wound a proper direction for future coaptation, which, as the tension is reduced by moderate suppuration, and the muscles surrounding the bone begin to decrease in bulk, will be rapidly effected.

With respect to the method of amputating by the double circular incision, there is but one part where I would recommend it in preference to any other; and this is below the knee, in the upper third of the leg, for here there is no necessity for a full cushion to support the weight of the body, and I can fairly say, that I never saw a case where a flap was formed from the calf of the leg, in which considerable retraction of the remaining muscles did not ensue, attended with great induration of the flap, separation of its edge from the skin on the front of the tibia, sometimes exfoliation of the bone, and generally tedious suppuration. Nor can I speak much in favour of the method recommended by Mr. Syme, viz. of forming an anterior and posterior flap; for before I saw his paper, I once performed this operation in the presence of staff-surgeon Hume, and regret to say, that my success was so indifferent, that I have not since repeated it.

After saying so much on amputation, it may not be irrelevant to offer a few concise remarks on the dressing of stumps.

It is not a little curious, that even now, in some of the first hospitals in Europe, surgeons should continue to envelop stumps in weighty bandages, compresses, dressings, &c.; however it is gratifying to observe that this practice is on the decline, and that a new light dawns on the treatment of wounds after operation; for it is known to every pathologist, that a high degree of inflammation has a tendency to prevent adhesion; and those dressings which must have the effect of preventing evaporation, cannot fail to excite a high degree of inflammation, thus directly operating against union by the first intention. In former times, sutures were employed after amputation, but they are now, with a very few exceptions, abandoned; and indeed most practitioners dispense with them in all wounds where they find it possible, asserting that they produce tension, erythema, and ulceration. This opinion is, in part, correct, and it is my belief, that when sutures are employed to bring parts into contact, they generally operate as above described; but when used only to keep parts in coaptation which easily adjust themselves (as flaps after amputation,) they create much less irritation, and by their retaining the parts more accurately in position, answer the intended end better than adhesive straps, which but too frequently give way in consequence of the exudation from the wound, by their bulk prevent evaporation, and, from the resin they contain, produce cutaneous irritation. Moreover the very act of applying these straps, bears the soft parts back against the bone; and I will venture to say, that those surgeons who may form good stumps, and instead of adhesive straps, employ three or four points of suture, will find the statement I have made in their favour correct. After amputation, I merely place a broad strap of adhesive plaster round the limb, above the wound, with a view of supporting the muscles, and preventing their retraction; then I insert a few points of suture, and place a fold of old linen, moistened with cold water, on the face of the stump. Many surgeons who have seen me thus act, have remarked that the lips of the wound between the sutures were not sufficiently in contact; but by exposure of the stump after ten hours, I have proved to them, that the succeeding inflammation produces the perfect apposition of the intermediate edges, so that, should the number of sutures at first appear insufficient, the experience of one case will

convince any one to the contrary. From the third to the fifth day, I generally remove the sutures, and in their place apply a few narrow adhesive straps; and if any considerable degree of suppuration should ensue, a light compress and roller, wetted with a lotion of camphorated spirit, have appeared to me very desirable.

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ESSAY ON INSANITY, PRINCIPALLY IN REFERENCE TO THE SEAT AND PATHOLOGY OF EROTIC MONOMANIA.

By Dr. Epps, Lecturer on Materia Medica and Chemistry, &c.

If any matter be an object of interest to the mass of mankind, it is insanity. This is one among many diseases that peculiarly claims the attention of every well-wisher to humanity, as it subjects many of his fellow-creatures to circumstances the most appalling and afflictive. Without casting any poetic imagery upon the matter, it is a malady which occasions the individual suffering under it to be deprived of his liberty, to be placed under the power of strangers, after being torn from the social circle, the endearing objects of home; and finally, and alas, too frequently, to be associated with those

"Whose laugh would make the wisest mad!"

and whose only point of relationship consists in similarity of circumstances. He is not the only sufferer. His family groan under the severest anguish, in contemplating their parent or brother deprived of his reason, and sorrow becomes the inhabitant of an abode where joy previously reigned. And what adds to the horrors of this disease, is the circumstance that persons of the most cultivated understandings are those individuals most frequently attacked; a truth recognised by the common observation, that genius and madness are nearly allied.

But if insanity be an object of general interest, it is one also of particular attraction to the medical practitioner, as he is often required to place himself in a relation to insane individuals the most responsible that can possibly be conceived. He can, on his affidavit, commit a fellow creature to confinement, can separate him from every object held dear; and this upon the conviction that the individual concerned is insane. When this responsibility is considered, the importance of the medical practitioner being well acquainted with the subject of insanity, of his being able to define where insanity begins, and where sanity ends; of being able to point out what kinds of insanity require coercive measures, and what lenient treatment; and of having it in his power to suit his measures most beneficially to the individuals affected, must be clearly seen. In gaining such a state of knowledge, it seems absolutely necessary, that the *morbid state*, constituting insanity, should be perfectly known. Its *proximate* cause should be clear; the varied forms under which insanity appears must be quite familiar, and a thorough acquaintance with the human mind should be possessed.

To ascertain the proximate cause, pathology and physiology must be diligently studied. Both are necessary; healthy structure must be studied with healthy function; and then diseased structure will be more easily discovered whenever there is diseased function. Beclard truly remarks:—"Il n'y a plus de phénomènes morbides ou de symptômes sans organes altérés, que de fonctiones sans organes réguliers, que de phénomènes sans corps, que de movement sans matière."*

Both the pathology and physiology of mental diseases have been lamentably neglected, and in the attempts that have been made towards bringing the same to a state of progression much opposition has been raised, from the influence of the erroneous views at present possessing many minds, exciting individuals biassed by them to cast a veil over fresh facts and new explanations of these facts. Indeed, it is true, in more senses than one, that "light is come into the world, and men loved darkness rather than light." Insanity these opponents have considered as *incurable*, or if not going to this extreme, success in its treatment is merely a game of chance, in which the odds are much against the practitioner. Both these erroneous notions have originated in the metaphysical doctrine of the *separate existence and total independence of mind and matter:* which doctrine is contradicted by every day's experience. The doctrine has, however, had a potent influence; and this being associated with the fact of the mind's *immortality*, has, by this association, gained that influence which it would otherwise never have attained. The mind being thus considered as a distinct and unconnected entity, it was deemed unreasonable to suppose that means acting upon the body simply, could be curative to this essence, this immaterial principle, mind. The poor insane individual was therefore left to the will of Providence, as was plainly said. But this was a child that lazy ignorance begat upon piety.

The mind, according to those who candidly examine all sides of the question, must be looked upon as *associated in its exhibitions with matter;* in fact, it is never manifested but through material organs. This indeed is an opposite opinion; but it seems to be the true one, and it is that which this Essay (the first of a series) has been written to establish, by proving that insanity is an *organic* disease.

In establishing this view, several points will be considered. Definitions and illustrations of some terms will first be given: general remarks, showing the probability of the truth of the position, that insanity is an organic disease; some remarks on the best theory of the facts and the general treatment of insanity; and then some pathological proofs of one particular part of the cerebral system being affected in a particular species of monomania.

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* Elémens d'Anatomie Générale, page 121.

1. *Definitions and Illustrations.*

In relation to insanity, many terms have come into use. To have a perfect understanding of the subject treated of, it will be necessary that an explanation of these be offered; for Cicero rightly observes: "Omnis enim, quæ a ratione suscipitur de aliqua re institutio, debet a definitione proficisci, ut intelligatur quid sit id de quo disputetur."

The terms referred to are *mania*, *melancholia*, *idiotism*, *fatuity*, *monomania*, *polymania*, and *insanity* itself.

To the explanation of these it will be necessary to make some general observations.

The mind is that to which insanity has reference. This principle, whatever it be, is known to us only by its phenomena, and these are what are commonly named *feelings*, *desires*, and *intellect*. The two former have been arranged under the *affective*, and the latter under the *intellectual* faculties. This division is important, because in cases of insanity, sometimes the affective faculties are diseased, while the intellectual are not; sometimes the converse, and sometimes both are affected. Instances of these will be given, as they may be useful as references.

First, a case may be mentioned of an individual whose desires were diseased, but whose intellectual faculties were sound. It is related by Pinel, that a patient had periodical fits of insanity, in which he was seized with an "uncontrollable fury, which inspired him with an irresistible propensity to seize any instrument or offensive weapon, to knock on the head the first person who presented himself to his view. He experienced a sort of internal combat between this ferocious impulse to destroy, and the profound horror which rose in his mind at the very idea of such a crime. There was no mark of wandering of memory, imagination, or judgment. He avowed to me, during his strict seclusion, that his propensity to commit a murder was absolutely forced and involuntary —that his wife, whom he tenderly loved, had nearly become his victim, he having scarcely had time to bid her fly to avoid his fury. All his lucid intervals were marked by melancholy reflections and expressions of remorse; and so great did his disgust of life become, that he had several times attempted, by an act of suicide, to bring it to a close. 'What reason have I,' said he, 'to cut the throat of the superintendent of the hospital, who treats us with so much kindness, and yet in my moments of fury I am tempted to rush upon him, as well as others, and plunge a dagger in his bosom. It is this unhappy and irresistible propensity which reduces me to despair, and makes me attempt my own life.'" *Sur l'Alienation Mentale.* Edition deuxième, p. 102 et 103, Sect. 117. This one case is quite sufficient to show that the affective faculty may be diseased, while the intellectual is healthy.

An example may now be given where the intellectual faculties are diseased, while the affective remain in a sane state. Such is the madness of some individuals, who, having dipped too deeply into metaphysical speculations, have lost their reason so far as to reason most absurdly; also such is that of those who have been engaged in very extensive calculations, and have imagined themselves, though as poor as possible, capable of paying the national debt.

However, the cases of diseased intellectual faculties are much more rare than those of diseased affective faculties.

Perhaps those which occur most frequently are cases in which both the intellectual and affective faculties are diseased. Instances in abundance occur in most works on insanity.

Frequently all the affective faculties are sound, with the exception of one: the same occurs with respect to the intellectual faculties. Such cases come under the head of *mania raisonnante.*

These illustrations being given, insanity may now be defined; and the definition, with the substance of which I was favoured by Dr. Wright, of the Bethlem, seems the best, viz. "Insanity is a disease of one or more faculties of the mind, of the diseased manifestations of which the patient is not conscious, or if conscious, is not able to control." Taking this as the *genus*, there are three *species;* one, in which the affective faculties only are injured; a second, when the intellectual; and the third, when both. Of these species we have varieties, *monomania* and *polymania*, the former being applied to a case of insanity when only one of either or both classes of faculties is affected; and the latter when more than one.

Mania and *melancholia* seem to be only different *modes* of any one of the species; mania, indicating *fury* combined with the insanity; melancholia, fear and anxiety.

Idiotism and *fatuity* remain to be explained: idiotism is when there is a *deficiency* in the usual number of faculties (this deficiency being *connate*, or born with the individual;) and *fatuity*, when this deficiency arises from the *loss of power* in certain existent faculties, from disease or some injuring cause. So that idiotism must be incurable; fatuity may, in some cases, perhaps, be cured.

General Remarks on the Probability that Insanity is an Organic Disease.

Some general facts favour the doctrine that insanity is an organic disease. They are the following:—

First, the intimate connexion which subsists between mind and body. The mind, every one is aware, does not attain its maximum of power at once, but, like the body, passes through its different stages successively. In infancy it is infantile; in childhood, childish; in youth juvenile; in manhood, vigorous; and at middle age, at its perfection. Hence again its power diminishes; its activity gradually becomes less, until matter and soul cease to be the companions of each other. Now, it cannot be supposed, that the mind, an immortal principle, can experience such changes; it must, like Hebe, be ever young. It is the corporeal organization, the brain, through which

the mind exhibits itself, that undergoes these changes; a circumstance favouring the view that insanity consists in an organic affection of the brain.

The second probability is dependent upon the fact, that insanity is a *hereditary* disease. It is well known that weak digestions, deranged hepatic systems, and other peculiar organizations, descend from parent to children, and no one hesitates to refer these to organization. Insanity is transmitted in a similar way, and why should not this circumstance be referred to a peculiar state of some organ? and, if any, why not of the brain?

The third probability rests upon the period at which insanity most frequently occurs. The period is between thirty and forty years of age, when all the mental powers are in the highest activity, when organization is in full activity, and when it may readily be conceived, the brain, like any other instrument, will be in a state of peculiar liability to be disorganized, to be put out of order.

The fourth probability is derived from the circumstance that *bodily* injuries and changes often induce insanity. Thus, among the insane, how often do we find those who have been engaged early in dissipation, who have studied too hard, or laboured without repose! In addition, in the case of women, insanity occurs frequently during menstruation, pregnancy, and after delivery, when powerful and peculiar actions are going on in the system, and on account of the sympathy between different parts of the body. It thus happens, that any diseased *state* then exhibits itself, and insanity, appearing at these periods and under such circumstances, can easily be understood as being an organic disease, which previously lurked in the system, but which now, having an opportunity for its exhibition, breaks forth in its most distressing features.

The circumstance of the influence of the *season* and *weather* in inducing insanity, may be referred to the same point. From an erroneous opinion, as has been proved by the observations of Haslam, of the influence of the moon, we have the term *lunacy* (luna, the moon.) Suicide is more common at some seasons than others. Pinel thinks a high temperature excites most readily and frequently the maniacal paroxysms: and mentions cases of remission and exacerbation, corresponding to the changes of the temperature of the atmosphere, from mildness to severe cold.

Another probability may be drawn from the periodical nature of the attacks of insanity. Several organs of the body have periodical activity; and this is ascribed by all to a peculiar condition of the organs themselves. The same may happen, we may conclude, with the brain, and consequently, taking the view that insanity is an organic disease, the peculiar nature of its attacks can be explained.

Other circumstances might be mentioned upon this point, but the foregoing seems sufficient to show the probability of the proposition, and, therefore, the next point of inquiry may be entered upon.

Pathological and Physiological Proofs that Insanity is an Organic Disease.

There is an axiom, held dear by minds constituted in a certain way, which is, "Scire vere est scire per causas." This, as a general principle, is highly important: it distinguishes the philosophic from the common observer; it is the source of all scientific inquiry; the birthplace of analytic examination; the friend to physiology and pathology, and the foe to empiricism.

In bringing forward the proofs that insanity is an organic disease, the following points will be noticed; first, some testimonies as to the brain, generally considered, being diseased in cases of insanity; second, some objections replied to; third, pathological cases referring to a particular species of mania, called *erotic monomania;* the statement of these cases being premised by some physiological facts, showing the intimate connexion between the parts found diseased in the cases cited, where the diseased manifestations existed, which, in the healthy condition, are found to lead to the healthy manifestation of those feelings exhibited morbidly in the erotic monomania.

With respect to the testimonies as to the brain, generally considered, being diseased in cases of insanity, the following remarks may be quoted from Lawrence. "I have examined, after death, the heads of many insane persons, and have hardly seen a single brain which did not exhibit obvious marks of disease; loaded vessels, increased serous secretions, in recent cases: in all instances of longer duration, unequivocal signs of present or past increased action; blood-vessels apparently more numerous, membranes thickened and opaque, depositions of coagulable lymph, forming adhesions, or adventitious membranes, watery effusions, and even abscesses: add to this that the insane often become paralytic, or are suddenly cut off by apoplexy."

"Dr. Haslam states that insanity, in every instance, is accompanied by organic alterations of the brain, and in these alterations, he places the proximate cause of the disease."—*Medico-Chirurgical Review*, July, 1827.

Spurzheim maintains that he *always* found organic alterations in the heads of insane people. M. Georget maintains the existence of these organic alterations.

Dr. Wright, of the Bethlem, stated, "that in a hundred cases of insane individuals, whose brains he had examined, ninety showed evident marks of disease; and the others some signs, such as the bloody points on cutting through the hemispheres."—*Medico Chirurgical Review*, p. 192, April 26, 1827.

Many such testimonies might be brought forward. These seem sufficient for the purpose: and therefore the objections, consisting of counter-statements, may now be noticed.

Some individuals, who, generally speaking, have not had the same opportunities of observation as those whose names have been mentioned, have asserted that they have examined the brains of insane individuals, and have not

perceived any organic disease. Here, three points present themselves for consideration; first, whether they are capable of making observations; second, whether the persons examined died insane, or had previously recovered and died of some other malady; and, third, whether some diseased states of the brain may exist without any perceptible disorganization or diseased structure.

An individual, in order to be able to make observations with accurate correctness respecting diseased structure, must be well acquainted with healthy structure; so well, indeed, as to be able to discover the *least* variation from the state of health. He must know the structure of the brain. Richerand rejects the observations of Geeding upon the brains of insane individuals, because this observer, according to him, did not sufficiently know the organization of the brain. To the observations of many medical practitioners, the same objection, and, on the same ground, may be made. Another circumstance, totally neglected till of late, tends to render null the objection of those observers who state that they have seen no diseased structure. It is thus that they, thinking the mind acts through the brain as an *individual whole*, look, in cases of insanity, for disease in the whole cerebral mass: whereas, if the views hereafter to be brought forward are correct, disease may exist in one part of the brain and not in another; and the attention not having been directed to the particular part diseased, and the other parts being found healthy, the whole was said to be so.* This may be said by some medical logicians to be *begging the question*. To such an observation, the reply may be made in the words of one who has done much to deliver the pathology of the brain from that state of backwardness in which it has been for many ages. In Bouillaud's work on Encephalite are the following observations: "A la verité, l'observation des maladies cérébrales est hérissée d'innombrables difficultés. Si le cerveau n'etait qu'un seul organe, ou bien si chacun des organes secondaires dont il est composé etait affecté isolément, rien ne serait plus aisé que determiner les rapports entre les symptômes et les lésions organiques: on aurait, pour ainsi dire, un problême à une suele inconnue, et partant, d'une solution aussi simple que possible. Mais puisque le cerveau est composé de plusieurs organes, dont chacun joue un rôle particulier; puisque plusieurs de ces organes peuvent etre affectés à la fois et differemment, et que les phenomenes varient suivant le siége, l'etendue, la nature, les complications de la maladie cerebrale, vous voyez que l'operation devient singulairement compliquée et que la difficulté de la solution du problême augmente avec le nombre des inconnues." P. xxii. Preface.

Again, it sometimes happens that an insane individual recovers, and dies of some other disease. We may not find in the brain of such an individual any perceptible change in organization: indeed, the organ may have recovered its healthy action; and hence, nothing can be inferred from such cases.

In addition, some diseased states of the brain may exist without a possibility of our perceiving them: that is, as our knowledge is at present. In the same manner, functional disorder of the stomach, liver, kidney, and other organs, exists without our being able to perceive any thing in the structure of those organs corresponding thereto. In amaurosis no disorganization very frequently can be perceived: but who doubts the existence of some diseased state as the cause of the functional derangement?

All these matters must be borne in mind and attended to, before an individual can say that, in cases of insanity, there is no morbid change of structure.

These objections being replied to, the more particular subject of this essay may now be brought forward, namely, *erotic monomania*, which will afford us the most striking proofs of insanity being an organic disease in certain cases to be brought under the notice of the reader. These cases, however, will be better understood, and their force, in establishing the proposition stated, more clearly manifest, when premised by some physiological facts, showing the intimate connexion between the parts found diseased in the cases cited, and the diseased manifestations therewith exhibited, by proving that, with the same parts when healthy, the same manifestations, only in a sane condition, are given rise to. The facts are now to be noticed; previously stating that in erotic monomania, the *cerebellum*, particularly the *vermiform process*, is found diseased, and the *sexual organs* are often in a state of activity. It need hardly be mentioned, that excessive sexual desire is the characteristic of erotic monomania: this excessive sexual desire, as exhibited by men, called *satyriasis;* by women, *nymphomania;* and being in some cases connected with excessive *priapism*, often with *masturbation*.

The sexal organs have been, and still are, imagined by many to be the source of sexual desire. This opinion, however, is erroneous; the genitals being merely as organs through which the desire, dependent upon the cerebellum, exhibits itself, and fulfils its destination; just in the same manner as the muscles are the ministers of the will, not the source of volition.

That the cerebellum is the source of the sexual desire, is proved by the circumstance

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* Lately an individual, well versed in the examination of the pathology of the brain, was engaged in examining the brain of a person who died of excessive masturbation. He perceived, slicing the brain in the usual way, no organic disease. A gentleman present, who considered the cerebellum to be the organ of the sexual desire, turned the attention of others present to this part of the cerebral mass, which was found to be diseased. No doubt the first gentleman would say the brain was healthy.

that whenever it is large the sexual desire is proportionably strong; when small, is proportionably weak. Some have the organ very large, and such persons are recommended in scripture to marry, for it is better "to marry than to burn;" in other words, it is better to give an outlet by marriage to the impulses of this faculty than continually to have its impulses exciting the mind, and inflaming the individual. Others, we are told, are "eunuchs from the mother's womb;" that is, not that they have no genital organs, but that their sexual desire is so weak, from the cerebellum being small, that they may indeed be said to be eunuchs.

Again, it is a well known fact, that a violent desire for sexual intercourse is often preceded by a pain in the cerebellum, which is relieved by sexual gratification. Many young people complain of pain at the back of the head about the period of puberty. When the catamenia are either excessive or deficient, and even when coming on, females often complain of pain in the back of the head; which is relieved by the natural evacuations taking place, being moderated when excessive, increased when deficient. The sexual desires have existed when the genital parts have not been developed, as in children of two, three, four and six years of age.—Gall, *Sur les Fonctions du Cerveau.* Tome iii. Again, old men, whose genital organs are paralysed or inefficient, are often tormented with desires. And what is still more conclusive, individuals having no genital organs at all, have had the sexual desire most powerfully active; as women, who have no wombs.—Gall, lib. cit. *Memoirs de la Société de Paris,* par Professeur Caillot. Case in Guy's Hospital recorded in the Lancet. And the converse has occurred, that those who have had the genital organs perfect have not had the sexual desire: "The mother of one of Napoleon's generals, as well as of other children, told a friend of mine, 'Qu'elle n'avoit au que le douleur d'enfanter.'" And the late Dr. Heberden has the following passage: "Duo mariti mihi narrarunt uxores suas in venerem fuisse frigidas, omni ejus cupiditate et voluptate carentes: sæpe tamen gravidas factas esse, et recte peperisse." Gall has known similar cases.—Elliotson's *Blumenbach,* p. 44.

Many other circumstances might be cited to show that the sexual desire does not depend upon the genital organs. Still, however, though not dependent, there exists an intimate connexion between these organs and the *cerebellum,* held to be the source of the sexual desire. A few facts illustrative of this connexion may be mentioned; and first, with respect to the dependence of the genital organs on the cerebellum.

Voluptuous dreams, which certainly are *mental* actions, often excite an ejaculation of semen. Spirituous liquors, which excite the energies of the mind, have a powerful effect in inducing venereal desires. Baron Larrey mentions the case of a soldier who had received a sabre cut on his nucha, and who lost thereby the venereal impulse. Hippocrates asserts, that the Scythians rendered themselves impotent by cutting the veins which are behind the ears. Brantome, in his memoirs, (vol. ii. p. 182,) mentions the case of a person of the name of Burie, who, from a blow on the nucha, in battle, lost all power of seminal emission. Dr. Formey had a case, where the patient, from a wound on the nucha, had excessive erections, followed by complete want of power, which he recovered after six months. Larrey gave Dr. Gall several similar cases. Some facts may now be mentioned showing the connexion between the genital organs and the cerebellum, the genital organs being the parts affected.

Castration has a very powerful effect upon the cerebellum; so much so, that if the animal be castrated early in life, the cerebellum does not increase in size, and is never troubled by the sexual desire; but if the castration be performed late in life, the cerebellum having attained its full size, the desire exists without the ability to gratify the same. Any one to perceive the effect of castration, need only examine the skull of a cock and a capon; of a bull and of an ox, and the difference of size in the region of the cerebellum will be immediately apparent.

But what is still more particular in showing the connexion between the genital organs and the cerebellum, is the influence of *unilateral* castration. Several cases are related by Dr. Gall, in his work already cited, of individuals, who, having lost the testicle of one side, had the opposite lobe of the cerebellum diminished, indicated by one side of the head in that part being flat, while the other was bossy. This celebrated individual performed, in addition, numerous experiments on animals, in which he found, that when an animal was castrated on one side, the opposite lobe of the cerebellum diminished; that is, if the right testicle was taken away, the left lobe of the cerebellum was affected; if the left testicle, the right lobe.

Cases have occurred, moreover, where, from sabre cuts in the region of the cerebellum, atrophy and softening of the testicles took place.

These general remarks being made, the cases showing that, in erotic monomania, the *cerebellum* is diseased, and that therefore insanity is an organic disease, may be brought forward.

The symptoms of erotic monomania are merely diseased manifestations of the feeling of the sexual desire. Excessive lustfulness of action, look and word indicate it. Persons under this disease often talk of building temples to Love, &c.

Case 1.—A boy, aged 13, gave himself over to onanism. This induced paralysis of the lower extremities, loss of sight, and, finally, death. On dissection, the *lobes of his cerebellum* were found to be filled with pus: the left lobe being affected more than the right; both testicles were small; that of the right side was almost gone, and of a very soft consistence. The left lobe of the cerebellum was most affected.

Case 2.—A man, aged 32, brought at night

to the Hôtel Dieu, having been found by the national guard on the quay with some prostitutes, one of whom stated, that in the act of coition, having drank liberally before, he fell down in the state to be described. His face was extremely red; heat of the head and the neck very considerable; pulse 90; respiration interrupted; occasionally convulsed; genitals hot; extremities cold. Thirty leeches were applied; he was bled from the feet. The patient died. It was imagined that he had taken cantharides, from the state of the genital organs; but none of this substance was detected. All present at the dissection were struck at the *inflamed appearance* of the *cerebellum*. The hemispheres of the brain presented no trace of organic alteration; the anterior corpora quadragemina were slightly inflamed; the posterior much more so; *the processus cerebelli ad testes* were of the same colour; the *hemispheres of the cerebellum* were much injected, but much less than the *superior vermicular process*.

This case is given by M. Serres. This extraordinary pathological condition, as he calls it, brought to his remembrance the doctrine of Gall, that the cerebellum is the organ of the sexual desire; and he straightway proceeded to examine whether Dr. Gall's opinion was established by analogous cases. He states, that he remembered two cases of cerebellic inflammation, where erections and abundant ejaculations continued during their duration; and adds, fresh facts have confirmed the view originally taken; namely, that the cerebellum is the seat of the sexual desire. He affords no other cases.

Case 3.—Thomas Marianne, aged 55, sanguineous temperament, very much addicted to venery, was brought to the hospital, having all the symptoms of cerebellic apoplexy: as concomitants of which, considerable *heat of the neck* and abundant ejaculation at the end of the paroxysm, swelling and vivid redness of the genitals, may be mentioned. He died. The substance of the brain presented nothing particular; the *cerebellum* was redder than natural. When the *superior vermicular* process was cut, the action of the air gave it immediately a lively red colour, and all the white substance seemed as if macerated in blood. Thick, black blood was found in the process.

Case 4.—Nicolas Bourgoin, aged 46, was brought into the hospital, May 17, 1818. Nothing was known of his previous condition: but the symptoms indicated violent cerebral apoplexy. He had erections, tension, and swelling of the genital parts, abundant ejaculation of semen during the night, apparently at the end of the paroxysm. M. Serres predicted that the cerebellum would, at death, be found injured. Satyriasis became very violent, and the patient died; the volume of the cerebellum was found to be larger than ordinary; the *cerebellum* was very red; clots of blood were found in the *superior vermiform process*. Drs. Edwards and Lisfranc were present at this dissection.

Case 5.—A man, of the name of Gembar, aged 52, received into the hopital of la Pitié, March 5, 1819. He was insensible; paralysed; the penis in a state of constant turgescence, and occasionally erected. From these and other symptoms, it was concluded, that there would be disease of the cerebellum. This was found to be the case; the left hemisphere of the cerebellum was diseased, and the *superior vermicular process*.

Taking a view of these cases, M. Serres concludes, that the priapism had been produced by the lesion of the cerebellum; and that if these lesions have not been observed, it has happened from the want of attention on the part of physicians.

Case 6.—This is related by Dr. Falret, in testimony of the truth and accuracy of M. Serres's diagnostic. The symptoms of this case indicated cerebral apoplexy; the penis, in addition, was swelled, stretched, red, and in a state of erection. The cerebellum, on dissection, was found to be injected; the *superior vermicular process* was diseased.

Case 7.—John Baptist Francis Guardier, aged 42 years, very much addicted to venery, was brought, on the 29th of January, to the hospital, insensible; face red and swelled. His wife stated, that his penis had been in a state of erection all the night; there had been an abundant emission of semen: the neck was swelled, and there was great heat in the occipital region. In the evening, a paroxysm occurred, the penis became erect, and he applied his hand to this organ. Though ice was applied to the penis, it still retained its erection. He died.

On dissection, the cerebellum was found larger than usual, and the vertebral artery of a large caliber; the anterior part of the *cerebellum* was corroded, and the superior vermiform process seems to have been implicated.

Case 8.—John Charles Montagnon, aged 50, was seized with the symptoms of cerebellic apoplexy; in him the *cerebellum* was found diseased.

Case 9.—Mary Jane Josephine Doubourg, aged 33, early addicted to venery. Not satisfied with the common sources of gratification, she delivered herself up to the vice of masturbation. She, to be relieved from the state which was induced, submitted to have the clitoris removed: she became imbecile at 32; died at la Pitié. On dissection, the superior and inferior vermicular process were found diseased and hardened; little ulcers were here and there; the cerebellum was softened, and had lessened in size. The cerebellic arteries were extraordinarily developed, as were the hypogastric, the uterine, the vaginal, the urinary, and the hæmorrhoidal.

Case 10.—This is a case with which the Phrenological Society was favoured by Dr. Elliotson, communicated to him by Dr. Clarke, who sent a drawing, wherein the inflamed appearance of the *superior vermicular process* was very apparent.

Case 11.—This is a case of chorea; of which disease an insane individual died in Bethlem Hospital. He was completely bestial: the *superior vermiform process* was in him found diseased.

Case 12.—This is the case of a young man, coming under my own notice, who died of satyriasis; in him the *cerebellum* was found diseased.

Case 13.—This case is one of a young lady, coming under my notice, who died of nymphomania, and in whom the *cerebellum* was, in some parts, converted into pus.

Case 14.—This, the last that need be mentioned, is given by Magendie in one of his last Journals, in which case the cerebellum was found diseased.

It will be perceived, that these cases are extremely curious. They convey much information, and give much room for conception. The paralysis generally attendant upon the disease; the ejaculations of semen; the heated condition of the neck; and the disease of the superior vermiform process and of the cerebellum, are matters which justifiably claim the attention.

In conclusion, it may be added, that Dr. Monro, speaking of the cerebral mass, says, "Abscesses are sometimes found in the brain; more frequently in the cerebellum;" (Anatomy, vol. iii. p. 218.) a fact, which corresponds to the powerful and injurious predominance of the sexual desire.

Such are some cases which can, at present, be presented to the reader, as proofs that in erotic monomania, the cerebellum, particularly that part called the superior vermiform process, is the part morbidly affected. Such cases will accumulate, and I have no doubt that I shall have the privilege, ere long, to present many such cases to the notice of the reader.

Thus it seems to us to be proved, that insanity is an *organic* disease; and that in this particular disease, a particular part of the cerebral system is affected. We shall hereafter find, that other diseases are connected with certain other parts of the cerebral system; and of this, as a fact, the essayist has no doubt, and he trusts that the same will be perfectly clear to others, when the facts are brought forward. We now therefore leave the *pathology* of erotic monomania in order to consider its *treatment*.

Treatment, &c.—In the treatment of erotic monomania, there are two points to be considered; first, whether the disease be *simple*, that is, uncombined with any other disease; and second, whether it be combined. If simple, the treatment will be different from that when the erotic monomania is complicated. To illustrate these views, it may be stated, that, in many cases of nymphomania, we have, as an attendant, in females, a suppression of the menstrual discharge. This is an effect produced, and often, by removing this effect, we remove the erotic monomania. In such complications, I have found the most happy effects produced by the application of from twenty to thirty leeches to the labia. These have acted, as it is vulgarly said, like a charm. And this, as a fact, be it remarked, has been urged against erotic monomania being a cerebellic disease, since the disease being removed by this application to the genital parts, proves, according to the objectors, the malady to be dependent upon these parts. The fallacy, however, of this objection is easily seen, Often from a running sore being healed apoplexy takes place; and often threatened apoplexy is prevented by opening a sore that has been closed. Now who would say, that the state of the parts inducing apoplexy is that of the sore? The application is quite clear.

The attention may now be turned more particularly to the disease of erotic monomania, viewed as simple. When it is said, viewed as simple, it is to be understood not as conveying the meaning that there is no other affection of the system, but no one so predominating as to form an object in the treatment any higher than a mere accessory symptom.

In many of the cases above related, the means are stated by which the monomania was attempted to be relieved; and the effect which leeches, applied to the upper part of the neck, produced, shows that we may justly have some dependence upon such means so applied. It has also been seen that often the termination of a paroxysm was produced by an ejaculation of semen. May not this deed of nature be taken as an indication? And might we not, justifiably, in such cases, have recourse to means exciting the seminal discharge, and then in the intervals have recourse to those means which might stop the increased and diseased action in the cerebellum? I have known, in some cases, the malady removed by the application of leeches, and the use of those means by which a determination of action is induced to other parts. In support of this practice of local bleeding is the fact already noticed, respecting the Scythians rendering their people impotent by bleeding from the veins at the back of the head.

I have never found any benefit from the use of blisters immediately to the part. Indeed, blisters, setons, frictions with volatile substances, often excite increased action in the genital parts. Whereas, on the other hand, priapisms, erections, and seminal ejaculations have been relieved by cold lotions applied to the nucha.

Such are some views respecting the treatment of this species, which is too common, and which I look upon as curable in the generality of cases.

Other treatment is also useful; but that noticed has been brought forward principally because it has reference to the particular views respecting the *seat* of the disease.

Such is a brief outline of the subject of *erotic monomania;* and the remarks made, it is hoped, may have the effect of turning the attention of medical men more particulary to the pathology of insanity, on which subject the essayist will be most happy to receive any communications.

It was proposed at the outset to give some views on the treatment of insanity generally, and on the *theory* of that treatment. These subjects may, perhaps, be advantageously postponed until the other facts respecting other diseases, as dependent upon *cerebral disease*, are brought forward. A conclusion may there-

fore be made by observing, that the treatment of insanity which is most beneficial, is that which acts upon the malady as an organic disease, and also as founded upon the opinion that the mind exists in different states, and exhibits itself through a plurality of organs.

*** Some cases of epilepsy were mentioned at the late discussion on insanity at the Westminster Medical Society, wherein the cerebellum was diseased. In this I can readily believe; and the circumstance is not at all opposed to our proposition, inasmuch as the cerebellum evidently has some general functions in addition to the peculiar function which we assign to it. This appears likely, because the *lobes of the cerebellum* exist in the mammalia only; in fishes, amphibia, many insects, and in birds, the *processus vermiformis* is the only part existing; and as this exists in all animals having the sexual desire, it is said to be the *primitive position*. I am not at all satisfied as yet with respect to the general functions which the addition of the two cerebellic lobes confers. But, that motion is in some measure concerned, especially the motions taking place in coition, I am inclined to believe from the facts, that Dr. Gall has traced fibres from the part of the spinal marrow supplying the parts of generation with nerves, to the cerebellum; and, lately, that a gentleman, who has been excited by artifical means to excessive venery, has become epileptic. May not then epilepsy be somewhat connected with the cerebellum? And will not these views afford some explanation of the fact above mentioned?

From the Transactions of the Medico-Chirurgical Society of Edinburgh.

CASE OF ANEURISM OF THE AORTA, WITH DISEASE OF THE SPINAL CORD. By Thomas Molison, M. D. Fellow of the Royal College of Surgeons, and one of the Surgeons of the New Town Dispensary.

Stewart, a chairman, æt. 34. Since the middle of January last has complained of frequent uneasiness and pain in both sides, more particularly the left; has also, for three or four months, been troubled with difficulty of breathing, upon any considerable exercise; and lately has had much difficulty in swallowing solids. Since the middle of April he has not been able to carry any considerable load. Yesterday he carried to Newhaven (distance one mile and a half) a bag of about twenty pounds weight, and bathed in the sea whilst warm; he had been in the water about a quarter of an hour, when he became very confused, and on coming out, fell amongst some stones; he then bled profusely at the mouth and nose, and, from that moment, lost all voluntary motion and sensation of his upper extremities. He was taken up and carried to an adjoining house; was afterwards put into a warm-bath, and, in the evening, was bled at the arm, and blistered on the nape of the neck; but passed a very restless night, with frequent shivering fits, which were reported to resemble convulsions.

16th July.—To-day he was brought to town; had vomited fluid and coagulated blood several times since last night: and when I saw him, at 5 P. M., he had just brought up a large quantity of fluid blood, which afterwards coagulated. He answered questions distinctly, although previously he had talked incoherently; he seemed somewhat lethargic; I therefore spoke loud, and repeated my questions until answered. He said that he was sore all over; but added, that the pains were most severe in the head, chest, and bowels. His features were expressive of much anxiety, and he almost constantly tossed about his head and legs, while his arms were cold and motionless, having a death-like pallid appearance. When he moves his extremities, he invariably contracts the muscles of the mouth, as if making some great exertion. I requested him to squeeze my hand; he then threw the muscles of his face into action, and said he squeezed with his whole force, while not a muscle of his arm moved, nor was he sensible there when pinched. Pulse 120; weak at the wrist and ankles, but much stronger proportionally in the carotids, where they could be seen beating at the distance of five or six feet. No palpitation at the heart; breathing natural; heat of the head augmented, but greatly diminished in all the extremities; considerable thirst; tongue very white; pupil natural; skin dry; complains of passing his urine involuntarily.

8 P. M. Seven or eight ounces of fluid blood have been discharged by the mouth.

11 P. M. Says he is still very unwell, and tosses about his head and legs. On introducing the catheter, he used great force with his legs.

17th, 8 A. M. Has slept none, retains his urine, and passes it voluntarily.

11 A. M. Has passed two very dark bloody alvine evacuations.

9 P. M. Does not move his head and legs so often.

11 P. M. Breathes softly, and seems in a quiet sleep; he received an injection with fifty drops of laudanum two hours ago.

18th. Slept several hours last night; about four o'clock he talked quite rationally; in a few minutes after, hemorrhage occurred at the mouth, and during this he expired.

20th July, 12 noon.—*Dissection.*—The body is rather muscular, with little fat. Heart and lungs natural; some slight adhesions between the pleuræ. An aneurismal tumour, of the size of a small orange, was observed on the left side of the spine, at the upper part of the root of the left lung. It freely communicated with the aorta and œsophagus, opposite to the fourth and fifth vertebres; indeed, in this part, almost the whole caliber of the œsophagus was destroyed. The left side of the bodies of the third, fourth, fifth and sixth vertebres were quite bare, and absorption had proceeded in many parts to the depth of a

third of an inch. The stomach contained a large, firm coagulum of blood, with prolongations of several inches into both œsophagus and duodenum, of which cavities it had taken an exact shape. The colon was greatly distended with air, and was of a deep dark colour, from the blood it contained. The small intestines were natural, with only some dark spots from the same cause.

Having removed the posterior arches of the three inferior cervical and of the whole of the dorsal vertebres, we observed the cellular substance on the outside of the dura mater of a much darker red than usual, and slightly infiltrated with a bloody purulent looking matter. Between the third dorsal vertebre and the sixth, there existed some extravasated blood immediately underneath the dura mater. Above the second dorsal vertebre the cord itself was firm, and appeared perfectly healthy; but below this, it gradually became soft and yellowish; and opposite to the fifth, sixth, seventh, and eighth, its substance assumed both the consistence and colour of thick cream, with no remains of organization. The cord at this part was so carefully inspected, that, if any medullary band had existed amongst the soft matter, it must have been seen. Three or four of the vertebres were in many parts denuded of their soft covering, where they form the anterior bony parietes of the cord: in some parts they were merely rough; in others, the absorption of the osseous matter was considerable. Nowhere was there any sensible deposition of lymph between the dura matter and arachnoid. The head was not opened; and we had much difficulty in obtaining liberty to open so much of the spine, which was done fifty-eight hours after death.

The treatment was sinapisms to the legs, which caused some heat and pain; the head was shaved; and cold water was frequently applied at the request of the patient, who said it relieved the pain. Turpentine and laudanum enemas were likewise employed: two of the former remained twelve hours, but did not seem to assist the evacuation of the dark bloody matter.

We have no hesitation in attributing the disease of the spinal cord to the aneurism; for, although the absorption was most extensive on the anterior surface of the bodies of the vertebres, yet the disease seems to have passed through these spongy parts, and to have showed itself in the same process of absorption on the posterior surface, although there could be here no pressure from the aneurism, which is generally considered as the cause of the absorption of the osseus matter. It is more than probable that the disease of the spinal cord had existed for some considerable time previous to the bursting of the aneurism, and, of course, that all the sudden serious symptoms were owing to the great loss of blood.

Softening and disorganization of the dorsal portion of the spinal cord are commonly attended with convulsions of the lower extremities, and followed by paralysis: but still some few cases are on record where this portion of the cord has been found destroyed, and yet no paralysis has supervened. I may mention the case of a gun-shot wound, which occurred in the practice of Desault,, where the spinal cord was completely divided opposite to the tenth dorsal vertebre. M. Janson, of Lyons, also mentions a case, where the inferior dorsal portion of the cord was converted into a pulpy matter. Olivier, in his work on the Diseases of the Spinal Cord, records a case of M. Van-de-Keere, where there was extensive caries of the bodies of the dorsal vertebres, with complete absorption of the cord, between the ninth dorsal vertebre and first lumbar. The termination of the superior end was bulbous, whilst that of the inferior was compressed backwards. The colour and consistence of the cord remained unaltered. In Desault's and Van-de-Keere's case, there was not only no paralysis, but perfect sensation remained in the lower extremities until death. From the impossibility of explaining the above cases, M. Andral *junior* is inclined to doubt their accuracy; but if medical men were to draw such inferences, I need scarcely say how injurious it would be to the future improvement of our profession.

Magendie, who is exceedingly ingenious in many of his observations, endeavours to explain the difficulty, by considering the pia mater as one of the organs or conductors of sensation. Dreading that our patient Stewart might have hurt the spine in his fall on coming out of the water, for he could give no very distinct account how he fell, I carefully felt all the spinous processes, and tapped them firmly with the points of my fingers, but he said he had no pain there, nor ever had. M. Olivier states, that the most constant symptom of this disease is an excessively acute deep seated pain, accompanied with a feeling of burning heat along the spine, greatly exasperated by motion; and adds, that all authors who have written on this disease, with the exception of M. Pinel *junior*, who has mentioned two cases, have noticed this pain in the back. M. Andral* however says, that this pain has been remarked in a very few instances only, and adds, that it still remains for further experience to point out how far this local pain indicates the existence and seat of the inflammation of the cord. Certainly Stewart never complained of this local pain in the spine, not even when he was freely moved.

That general convulsions may have occurred in this case is possible, as the friends declare, that, during the first night after bathing in the sea, his face was frequently twisted to one side, with fixed staring eyes, and that then it required several persons to hold him in bed; but certainly at no time when I saw him did any thing resembling convulsions occur. He frequently threw the muscles of his face into action on turning over his legs, or drawing them up, but this was evidently a voluntary motion; and at no time afterwards were his lower extremities paralysed.

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* Dict. de Médecine, tome 18.

Regarding the paralysis and loss of sensation of the upper extremities, I can give no explanation, nor am I aware of a similar case on record.

From the Edinburgh Medical and Surgical Journal.

CASE OF OBSTRUCTION IN THE ARTERIES FROM AN INTERNAL CAUSE.

By James Syme, Esq., Fellow of the Royal College of Surgeons in London and Edinburgh, and Lecturer on Surgery in Edinburgh.

On the evening of Tuesday the 22d January, I was asked to meet Mr. Lizars in consultation, on the case of Alexander Young, a farm-servant on the estate of Riccarton.

I found the patient a thin, rather unhealthy looking man, aged 58. His pulse was 90, soft, and moderately full. His tongue was moist and clean. His mind, though easily agitated, was free from delirium or confusion. His countenance expressed much anxiety and pain, which he referred to the left foot and leg.

About the middle of this leg, on its outer side, there was a large aperture in the integuments, which exposed to view the anterior tibial and peroneal muscles in a state of mortification. A bright and diffused redness bounded this part superiorly and laterally; while all the limb below on the same side, as far as the ankle, was cold and livid. There was a large slough in the centre of the sole of the foot, and almost all the toes were black either on their sides or extremities. On several parts of the instep and inner side of the foot we also observed those discoloured marks so well described by Mr. Pott as precursors of the mortification which occurs in old people. The spots in question seemed to be owing to death of the cutis and separation of the cuticle, without any effusion of serum to raise it into a vesicle.

I was told that in the beginning of December he had suffered from pain in the left side, together with oppression in breathing, for which complaints he had been repeatedly blooded and blistered. He was much relieved by these measures; but on the 30th of the same month he had a relapse,—complaining of pain in the right side under the false ribs, shivering, and uneasiness in both legs, but particularly the left one. On the following day he was again blooded from the arm and leeched on the right side. A blister was then applied to the chest, and repeated sinapisms to the foot. The left leg being then painful, was subjected to warm bathing, friction with liniments, sinapisms, leeches, and, lastly, a blister, which was soon followed by sloughing of the skin over which it had been placed. About the same time a blister was applied to the sole of the foot, which also was succeeded by death of the part concerned. An incision was afterwards made through the dead skin of the leg, and a *seton* introduced. The mortification had thus existed about a fortnight previous to the time I saw him, and had not extended upwards.

Having fully considered all the circumstances now related, we were unanimously of opinion (viz. the practitioner who had treated the case from its commencement, another gentleman who had been consulted after the gangrene appeared, Mr. Lizars, and myself) that the disease, if allowed to proceed, must inevitably and speedily destroy the patient; that there was reason to think the mortification might in part be owing to the severe treatment which the limb had received in the first instance; and therefore that amputation afforded, though certainly very little, nevertheless, some chance of escape from destruction otherwise certain.

This opinion being distinctly explained to the patient and his friends, it was agreed that he should submit to the operation, which, with the assistance of Mr. Lizars, I accordingly performed above the knee.

On examining the limb, which we did very carefully the following day, we found the artery, where cut across, quite pervious and apparently sound in its coats. On entering the popliteal cavity it became firmly obstructed by a dense white coagulum, like that lining old aneurisms, and continued to be so all the way to its division into the peroneal and tibial arteries, which also were obstructed to the extent of an inch and a half from their origin; beyond this they were pervious and apparently healthy. The obstructed vessel seemed somewhat contracted, particularly about the middle of the popliteal portion; its coats were here also thicker than usual, and adhered to the clot. We could not discern the smallest speck of ossification or other morbid degeneration in any part of the artery. The vein was much thickened in its coats, so as to resemble an artery, but was not obstructed, or in other respects different from its usual condition.

As the patient bore the operation well—was freed from the distracting pain which he previously suffered—and continued to do well for several days, I flattered myself with having struck at the root of the evil. On Sunday the 25th I saw him for the first time after the operation. His appearance was then much improved, and nearly half of the stump had healed by the first intention; but his pulse and respiration were very unsatisfactory; the former being 120 and undulating, the latter also much hurried. On Monday he complained of pain in the chest. On Wednesday night he died.

The dissection was performed on Friday, in the presence of all the gentlemen who had been concerned in the case.

The remaining inferior extremity was free from any appearance of disease.

On the outer side of the stump, all the way up to the hip, the cuticle was detached, and the muscles separated from each other by a purulent effusion.

The external appearance of the lungs was

quite healthy, excepting a little emphysema at the upper part, but their texture was remarkably softened, as if they had recently suffered from inflammatory action. This change was particularly observed at the posterior and lower part.

In the substance of the spleen there was a large abscess, the parietes of which were strengthened by strong adhesions to the diaphragm, stomach, &c.

The heart was extremely soft, so that the finger could be pushed through its substance with great ease. The arch of the aorta was not at all dilated, nor altered in the textures of its coats, but its inner surface was very red, and seemed as if not so smooth as usual, having, a velvety sort of aspect, and appeared, moreover, somewhat softened. The abdominal portion of the aorta was filled with dark half-coagulated blood, but retained its usual colour. The right internal iliac artery was firmly obstructed from its origin, as were the right and left internal iliac veins. The left femoral artery was pervious all the way to its extremity, where the ligature remained, but the profunda and corresponding vein were firmly obstructed, as were also the same vessels of the right side. The right femoral was pervious, but the popliteal was obstructed precisely as I have already described the left one, which was amputated.

We searched carefully for traces of chronic disease in the arterial system, but could find none; not the smallest trace of osseous or other degeneration. I have since found a small scale at the origin of each internal iliac, but how inconsiderable, and how little affecting the inner surface of the artery, will appear from the fact of its having been overlooked at the dissection, when some of the parties present were very diligent in searching for such morbid changes.

I do not recollect of ever dissecting a subject so far advanced in life, whose arteries were in a more healthy condition as to texture.

My opinion of the case is, that it was one of acute inflammation of the arteries, similar to the one recorded in Mr. Hodgson's Treatise on the Blood-vessels, and similar to those very rare cases in which the vessels were obstructed from effusion consequent on inflammation of their coats.

The different obstructions found at the dissection must either have existed at the time of the operation or taken place after it. If they did not exist then, there was nothing to prevent the operation from being successful, and if they existed when it was performed, then it must be allowed that the collateral circulation which had sufficed so long might have nourished the limb permanently; so that, in either view of the case, the operation afforded a chance of recovery.

As to the general question respecting amputation on account of gangrene, I certainly think that the operation is not proper when the disease commences without any external cause. Thus a few days before the case above related happened, I was consulted respecting a patient about 40, whose foot and leg had mortified, without any apparent cause whatever; but though the friends were very anxious to have the limb removed, I would not consent to do so, as there could be no doubt that the disease would continue to extend after the operation.

In conclusion, I venture to suggest that obstruction of arteries, as a consequence of effusion from their own coats, may not be so rare an occurrence as it would appear to be, from the extreme rarity of such cases on record. It has often been remarked that the vessels leading to or from a mortified part were rendered impervious by coagulum; and this circumstance has hitherto been explained loosely as a consequence of the mortification, as an effect of nature to prevent hemorrhage. But it is well known, as I can testify from repeated observation, that the vessels are not always obstructed, which they ought to be if the obstruction were the effect of mortification. And, therefore, I think it may reasonably be asked, is not the obstruction rather the cause of mortification in those cases where it exists? The coagulum certainly does not look like one resulting from mere stagnation of blood in the vessels; since, instead of being soft, bloody, and *smaller* than the caliber of the vessel, it is firm, white, and closely impacted, so as to render it difficult to lay open the vessel without injury to its contents.

I have long been satisfied that ossification alone is not sufficient to occasion mortification, since, were it so, seven people out of ten who have passed the age of sixty ought to suffer from mortification of the toes; and I have no doubt that, in addition to the ossification, there is some farther obstruction, as from contraction of the vessel, of which there is a specimen in my possession, the aorta hardly admitting the little finger; or from coagulation, of which also I have a specimen, in the femoral artery of an old man who died of this miserable disease. The vessel is completely plugged for the extent of five or six inches, by an exceedingly firm white fibrinous coagulum.

From the Archives Generales de Medecine.

SPINA-VENTOSA DU CUBITUS ENVELOPPE PAR UNE ENORME TUMEUR SQUIRRHEUSE ET ENCEPHALOIDE; *double altération développée dans l'espace de six mois à l'avant-bras droit.* Par le docteur OLLIVIER.

Jean Morille, æt. 24, a weaver by trade, entered the hospital at Angers March 11, 1819. He possessed a robust constitution, and had always enjoyed perfect health until the preceding July, when he began to complain of fugitive pains in the right forearm. In a short time the pains became fixed at the upper and back part of the forearm, near the elbow, and continued without mitigation till September, when a slight swelling was per-

ceptible in the part, which from that time occasioned constant and distressing insomnia. The tumour sensibly augmented in volume, extending along the posterior part of the ulna; it was hard, the integuments presented their natural colour, and the motions of the ring and little fingers were impeded. In January, the surgeon in attendance, perceiving a fluctuation in the spot where the tumour had first made its appearance, made an incision into the part about an inch in length, which bled freely, and the hemorrhage could with difficulty be arrested by strong compression. The wound readily healed, but the progress of the tumour was subsequently more rapid than before. Cataplasms of green wheat were applied upon a part of the surface of the tumour, and the skin irritated thereby, lost its ordinary whiteness, and assumed a livid hue.

When the patient entered the hospital, the tumour had existed six months; its form was that of an ovoid, flattened before and behind; transversely its greatest circumference was twenty-one inches, and twenty-six, measured longitudinally; it extended from the inferior fifth of the arm to within three fingers' breadth of the wrist, occupying more particularly the anterior and inner part of the forearm, so that the radial side was not covered by it. The elbow joint appeared to be enveloped by the tumour; the skin possessing a violet tinge, was shining, greatly distended, and slightly ulcerated at the spot where the incision had been made, but was unaltered in every other part. A pretty strong degree of compression occasioned only a slight increase of pain; the temperature was not greater than that of other parts of the body; the pulsations of the radial artery were somewhat accelerated. There was a slight œdema of the hand; the fingers were constantly bent, and every attempt to straighten them occasioned acute pain in the tumour; the forearm was flexed to a right angle upon the arm, and the motions of supination and pronation were impossible.

Notwithstanding the general pallor of the patient, the softness and flaccidity of his muscular system, his health did not appear to be much affected; his appetite and digestion were good, and he had retained his *embonpoint;* he complained only of extreme weariness, arising from the insomnia which had continued for several months, and of the inconvenience arising from the weight and enormous magnitude of the tumour, which augmented the pain, and rendered every motion irksome. The arm was amputated on the 18th of March, and towards the latter part of April the patient was discharged cured.

Upon examination the tumour was found to weigh nine pounds; the violet tint of the skin disappeared after the operation, and on the posterior surface of the tumour, this membrane was observed to be sensibly thicker and denser than in other parts; the corresponding cellular tissue was lardaceous and infiltrated with serum. The subcutaneous veins were enlarged, flattened, and their parietes thickened; between the borders of the incision, which has been mentioned as having been made some months before, there was a small, scirrhous, papilliform, and slightly projecting body; the surface of the tumour was regularly rounded, except on the inner side of the forearm, where it was unequally lobulated. The muscles arising from the internal condyle, such as the pronator teres, flexor carpi radialis, &c. were spread out upon the anterior surface of the tumour, as were likewise the extensor digitorum communis, extensor carpi ulnaris, &c. posteriorly. The tumour, separated from its investments, extended from the humero-cubital articulation to the upper margin of the pronator quadratus muscle. The fleshy fibres of the flexor digitorum profundus, and the flexor pollicis longus had entirely disappeared, and were replaced by the lardaceous and cartilaginiform substance which composed the tumour; the same alteration extended in part to their tendons. Posteriorly, the anconeus, the long abductor, the long and short extensor of the thumb, the extensor primi digiti, and the supinator radii brevis, had undergone, some altogether, and others in part, the same degenerescence. The change from muscular tissue to the lardaceous state, could readily be traced, the fibres were observed colourless and infiltrated with serum, forming a mass which preserved the form of the muscle until its union with the tumour, when they could no longer be distinguished.

The substance of the tumour was hard, and presented a smooth surface when incised by the knife, displaying in great number the orifices of minute vessels; it consisted of scirrhous and encephaloid tissue, and excavations were observed in different parts, containing, some a sanguineous serum, and others a yellowish fluid; one, larger than the others, existed opposite the spot where the incision had been made, and gave rise to the fluctuation perceived there. The tumour adhered to both surfaces of the inter-osseous ligament, surrounding the artery of the same name, which had undergone no alteration; penetrating between the radius and the ulna, it had produced an incomplete luxation of the former, outwards upon the humerus. The cartilages and synovial membrane of the elbow joint were sound, the latter contained some flocculi like inspissated synovia, surrounded by a very delicate membrane, permeated by an infinite number of capillary ramifications. The density of the tumour increased in the vicinity of the ulna, which was evidently the centre round which it had been formed.

The humerus was sound; the radius was enlarged but not softened, covered with unequal vegetations, and separated from the ulna about an inch; its articulation with the latter was destroyed. The ulna, equally hypertrophied and firm, was bristled in its superior half by a multitude of osseous fibres, which formed upon its surface a very irregular, spongy, and cellular net-work, intermingled with a resisting cartilaginiform tissue, which insinuated itself into the smallest interstices,

and in certain points adhered intimately to the bone. In proportion as the osseous vegetations separated from the ulna, they appeared to lose their continuity, and to form an alveolar tissue, with large plates, in the midst of the substance which composed the centre of the tumour. The most eccentric filaments of this osseous net-work, became gradually confounded with each other, and disappeared in the tissue of the tumour about two inches from its periphery. The cartilage investing the superior extremity of the ulna, was more pliant, but quite as firm as in its usual state; it had a more evidently fibrous appearance. The articulation of the wrist was sound, and all its motions free.

Dr. Ollivier refers to an analogous case described by Boyer;* in this instance, however, the disease was evidently constitutional, and its development occupied a space of twenty years, which is strongly contrasted with the rapid march of the case just narrated. In both instances, the disease commenced in the extremity of the bones near the articulation, without implicating the latter; but in that related by Boyer, the osseous vegetations were accompanied by a dilatation of the canal of the femur, on which bone the disease was situated; in the present case nothing of the kind was observable; the ulna was enlarged, its consistence not sensibly changed, and the inequalities on its surface—the vegetations, and the areolar spongy tissue—appeared to be the result of a true hypertrophy. In both cases, the disease of the bone preceded the development of the surrounding scirrhous mass, so that it appeared to have been the exciting cause of this degenerescence. Dr. O. inquires whether this co-existence depended upon the osseous spiculæ, which diverging from the bone into the surrounding parts, induced a constantly increasing degree of irritation? or whether it is to be referred to the nature of the cause which primarily gave origin to the disease of the bone?

From the Transactions of the Medico-Chirurgical Society of Edinburgh.

CASE OF DISEASE OF THE HEART.

By J. H. Wishart, F. R. S. E., Surgeon to the King in Scotland.

Mrs. Edmonston, æt. 28, March 28, 1827, is affected with palpitation of the heart of several years' standing: the pulsation is very irregular and intermitting; it is not confined to the natural situation between the sixth and seventh ribs, but it may be felt nearly as high as the clavicle on the left side of the sternum. The beat is so strong, that it is often heard by her attendants; and, on approaching the ear, the sound is very loud. She has a constant, severe tickling cough, with great anxiety and hurried breathing; the jujular veins have a distinct undulatory motion. The pulse at the wrist is so feeble and irregular, that it can scarcely be numbered. Her chest is very much emaciated, and the mammæ shrunk. The lower extremities are œdematous; the swelling extends up to the pelvis, and there appears also to be slight effusion in the abdomen, but no fluctuation. Urine very scanty and high coloured; bowels open; appetite natural; considerable thirst.

This complaint of the heart is of about seven years' duration: she has during that time been unable to walk quick, or up stairs, without violent palpitation being brought on. She was always aware of it herself, and, of late, her sister, who used to sleep with her, was sensible of the sound produced by the beating of the heart. It has increased considerably within these nine months, since she was married, and has had more to do in going about in the management of her house. The dropsical swellings have supervened within these six weeks.

On visiting this patient, after clearing out the bowels, I directed her to take pills of a grain of squills, and half a grain of calomel, night and morning; to use the nitrous æther in juniper tea, acidulated with cream of tartar, as her ordinary drink. I was very desirous of trying the effect of small bleedings from the arm, but on its being hinted at to her, I found that both the patient and her friends had imbibed a prejudice against bleeding, in consequence of its having been once tried with no benefit. The case was now too far advanced to expect any thing from it except temporary relief, and, on that account, I did not urge its use.

In the course of a few days, I found, in addition to the other symptoms, that her whole body was tinged of a yellow colour. I examined the right side; but although there seemed some firmness, I could not perceive any enlargement of the liver. The medicines had had the effect of increasing the quantity of urine, but had procured no relief to the pectoral symptoms; the cough was very distressing. The digitalis was ordered, in addition to the former prescription, and small doses of an opiate were directed for the cough.

There was, from this time, a very rapid aggravation of all the symptoms. The œdema of the lower extremities increased to a great degree; the surface of the skin was shining, and at the sides of the thighs and on the fore part of the legs, there was a reddish brown mottled appearance, as if blood had been effused. The yellowness of the whole body increased to a greater pitch than I had ever seen it. For two days previous to her death, she seemed unable to cough; she lay in a continual slumber, the pulsations of the heart became sensibly feebler, and she expired on the 18th April.

Dissection.—The skin of the whole body was tinged of a deep yellow colour; the lower extremities œdematous, and nearly double their natural size. On opening the thorax, the

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* Traité des Malad. Chir., tome iii. page 594, 1re. edition.

pericardium and heart occupied the space between the second and the seventh or eighth rib on the left side, but inclined more to the right than usual; the lungs were healthy; about twelve ounces of serum were contained in the cavities, rather more in the left than in the right. The pericardium contained six ounces of fluid of a deeper yellow colour than natural. The heart, also, was tinged of a yellow colour; it was a little enlarged in size. The right ventricle was occupied by a polypous concretion, extending into the auricle, which it filled so completely, as must have been a great impediment to the circulation from the veins into the auricle, and from the auricle into the ventricle. The polypous concretion adhered to the columnæ carneæ of the ventricle; it extended, also, for a very short space, into the pulmonary artery. On laying open the left ventricle, its walls were rather stronger than usual, but the difference was slight; its cavity was small, and contained very little blood. The mitral valves were cartilaginous, and the orifice so contracted, as scarcely to admit the point of the little finger. The opening of the aorta appeared at first sight completely closed; a caruncular excrescence, with fringed edges, projected into the ventricle. On examining it, it was found to originate on the aortal aspect of the valves, and passed through them into the heart; it filled up the space, so as scarcely to leave an opening sufficient to admit a split almond. The left auricle was much distended, and filled with a fleshy concretion mixed with blood, but of a quite different appearance from that in the right cavities of the heart, resembling the concretions that are frequently met with in aneurismal sacs. The two venæ cavæ were larger than natural.

About a pound and a half of very dark coloured serum was contained in the cavity of the abdomen. The omentum was of a dark colour: it did not extend, as usual, over the surface of the intestines, but was shrivelled up at the upper part. The right lobe of the liver was enlarged; very firm in its texture, and its surface covered with small white tubercles of the size of a pea. On cutting into it, similar tubercles were distributed through it. The gall bladder was of a whitish colour: it was quite collapsed, and did not contain more than a tea-spoonful of greenish bile. The duct leading into the duodenum was impervious, and did not admit the point of a small probe.

The pulsation of the jugular veins has been considered as a diagnostic mark of the dilatations of the right cavities of the heart. In some cases, the pulsation has also been observed to be communicated to the veins of the arm to such a degree, that it was difficult to distinguish them from the arteries. In these cases, the retrocession of the blood by the superior cava, seems entirely ascribable to the quantity of blood that has penetrated into the right ventricle, being greater than can be received by the pulmonary artery, there being also some defect in the corresponding ventriculo-auricular orifice. The contraction of the ventricle which projects the blood into the lungs, sends back a portion of it again into the auricle through which it has just passed, the blood returning again into the jugular veins, and meeting that which was flowing towards the heart, suddenly distends them. In this case, the inversion of the course of the blood was not owing to dilatation, but to the obstruction caused by the polypous concretion passing from the auricle into the ventricle, and the beginning of the pulmonary artery.

Diseases of the valves are among the most common affections of the heart, and occur as frequently as enlargements of its cavities. These affections are very often combined together. They occur most frequently in the left side of the heart, and, perhaps, more generally in the mitral valves; very often in the semilunar valves of the aorta, and are much rarer in the right side of the heart. Various are the forms which the valves assume in their changes. The venous, or mitral valves, frequently adhere to each other, and leave only a narrow fissure, or small hole, for the passage of the blood; or they are torn, rolled up, and compressed against the walls of the cavities; they are in various degrees of stiffness and induration, with swellings or irregularities on their surface. The arterial valves assume, also, a variety of forms; they adhere readily at their indurated edges, or an induration forms at their base, which unites with a bony ring; or they are separated into several portions, which contract and form irregular swellings; or they become rigid, and form a firm mass which prevents the flow of the blood from the heart.

The effect of these changes is a greater or smaller obstruction to the flow of the blood, and this may be either uniform and continued, or irregular and intermitting. The latter is produced by the soft excrescences, and such indurations of the valves as allow a certain degree of motion.

The symptoms characterising contraction of the openings of the heart are the same as denote every disease of that organ; such as anxiety, palpitations, faintings, &c.; but these symptoms are more strongly marked. In the state of rest, the patients often feel a slight, but always a certain, degree of contraction about the heart, marked by a superficial and unequal degree of difficulty of breathing; but as the disease increases, this becomes constant and often violent. The motion of the heart is sometimes, though rarely, regular, and corresponds with the pulse; but on the slightest motion it becomes in a moment irregular, and the pulse also varies from its previous correspondence with the pulsation of the heart. It becomes unusually quick, without necessarily becoming irregular; or when it does become irregular, its irregularity is different from that of the heart. The breathing becomes more affected, in proportion to the disturbance of the activity of the heart, and there is often a threatening of suffocation. Farther, these symptoms are accompanied with paleness and blueness of the countenance and of other

parts; frequent bleeding from the nose, startings in the sleep, and fainting fits.

In many cases we observe a whizzing of the heart, such as always takes place when the blood passes through a narrow aperture; but this appears more especially to take place when in consequence of the imperfect closure of the opening of the heart, a part of the wave of the blood is driven back through it. In contractions of the apertures of the heart, we find almost all the marks of other affections of the heart conjoined; they gradually supervene, such as œdematous swellings of the extremities: all the symptoms increase in the progress of the complaint, especially the want of correspondence of the beating of the heart with the pulse at the wrist, and the irregularity of both; as well as the sudden change from a state of comparative ease to that of urgent symptoms of suffocation.

Edinburgh, July, 1827.

A very short time after the preceding case was read to the Society, I stated at one of the meetings, that I had a case under my care which presented so precisely the same train of symptoms as the preceding, that I mentioned at the time that I had reason to anticipate the same morbid appearances, that is, the contraction of the semilunar and mitral valves. The symptoms particularly presenting, were the undulations of the jugular veins to a very great degree; indeed, it appeared as if there was the motion of *boiling* in the neck on both sides. The respiration was more difficult than in the former case; the patient could only breathe with her head leaning forward between her knees. There was great irregularity in the action of the heart; it generally intermitted every fourth beat, but the action was not so much increased in force. The pulse at the wrist was so feeble and irregular that it never could be counted. The patient had always been of a very sallow unhealthy complexion, but it had been ascribed to some affection of the abdominal viscera: she was frequently distressed with sickness and vomiting. The symptoms of affection of the heart had never been observed in any previous illness.

The usual medicines were tried without avail; œdema rapidly supervened, and she expired on the 17th September, about ten weeks from the commencement of her disease.

The body was opened in presence of Dr. Knox. It was œdematous to a very great degree; twenty-five ounces of serous fluid were found in each cavity of the thorax, and about ten ounces in the pericardium.

The heart was generally more muscular than usual, more especially the left auricle. The left auriculo-ventricular orifice was greatly contracted, in consequence of a thickened cartilaginous state of the mitral valve. The aortal valves were in a similar state, permanently thickened and cartilaginous; and the opening into the vessel scarcely admitted the little finger. It seemed even as if this state was about to extend to the right side of the heart; for the tricuspid valve was beginning to partake of this thickening, and the pulmonary semilunar valves were stronger than usual.

One kidney presented the appearance of that disease by which this organ is ultimately converted into a number of sacs communicating one with another.

Both preparations have been deposited in the Museum of the Royal College of Surgeons of Edinburgh.

From the Transactions of the Medico-Chirurgical Society of Edinburgh.

REMARKABLE CASE OF CRURAL HERNIA.

By George Ballingall, M. D., F. R. S. E. Surgeon Extraordinary to the King, and Regius Professor of Military Surgery in the University of Edinburgh.

On the 14th of March last, I was requested to visit Mrs. Hay, a patient of Mr. Young's, labouring under obstruction of the bowels; and who had previously been twice the subject of strangulated hernia. The first attack of this disease she had sustained six or seven and twenty years ago; and it was stated to have then terminated in ulceration at the groin, and the formation of an artificial anus, through which the fæces were discharged for some time. The second attack took place, under Mr. Young's observation, about sixteen years ago, and, after considerable difficulty, he succeeded in reducing the tumour by the taxis, without operation.

On examining the groin, where she complained of pain and tenderness upon pressure, an irregular cicatrix, like that of a scrofulous ulcer, presented itself, and a small puffy tumour was observed under the crural arch, in the usual seat of femoral hernia. This tumour could be reduced with the utmost facility, and the finger could be made to follow it up under Poupart's ligament, the aperture being uncommonly free and pervious. The tumour could be reproduced by coughing; it apparently contained a fluid, and was repeatedly protruded by the patient's efforts, and again returned, with ease, by Dr. Abercrombie, Mr. Young, and myself, going up generally with a slight gurgling noise. The patient's bowels had been completely obstructed for upwards of two days; she had vomited repeatedly, and complained of pain and tenderness over the whole surface of the abdomen, although these last mentioned symptoms had been considerably alleviated, previous to my seeing her, by blood-letting, blistering, and the other measures adopted by Mr. Young and Dr. Abercrombie.

Being satisfied, from an examination of the parts, that no stricture existed in the crural arch, we were led to conjecture that a contraction of the caliber of the intestine had probably taken place, in consequence of the previous sphacelus, or ulceration of the gut, six and twenty years before; and, under these circumstances, I suggested the possibility of

saving the patient's life, by making an incision over the site of the tumour in the groin; and, should the bowel be found obstructed or adherent in the neighbourhood of the crural arch, perforating it, to give vent to the fæces, thus forming again an artificial anus. The symptoms were not, however, at this time, thought sufficiently urgent, to justify an operation, the utility or success of which depended so much upon contingencies, which could not be foreseen, and twenty-four hours more were employed in attempts to relieve the bowels by the exhibition of purgatives, particularly the croton oil, and by the administration of turpentine injections. These not proving successful, the other gentlemen in consultation with me became desirous that an attempt should be made to save the patient's life by operation. I therefore made an incision in the usual form through the integuments, and opened a hernial sac, from which a small quantity of serous fluid was discharged; towards the outer or iliac side of this sac a small portion of intestine was found lying adherent to the integuments and to the sac, but having no appearance of strangulation, nor in any degree compressed or strictured by the crural arch; this portion of the gut was slightly wounded in dissecting back the integuments, and was afterwards opened, freely, as seen in the preparation on the table; the finger was introduced through the aperture, and carried both upwards and downwards, but no feculent matter was reached, nor was any discharged during the patient's life. She gradually sunk after the operation, and survived only about eighteen hours.

On dissection, the aperture was found to be in the lower part of the ileum, which was somewhat contracted both above and below the orifice, and in the upper part of the canal a considerable quantity of liquid fæces was found, which had begun to pass through the opening in the gut during the dissection. No obstacle, indeed, appeared to exist to the free passage of the fæces through the aperture which I had made; but the upper part of the canal seemed to have become paralysed previous to the operation, to have lost the power of propulsion, or, perhaps, to have taken on an inverted action, as indicated by the stercoraceous vomiting which latterly took place.

It was my intention to have submitted to the society, at some length, the observations which have suggested themselves to me, in reflecting upon the foregoing case, but, at present, other avocations prevent me from doing so; and I shall only observe, that this, and many other cases, press strongly upon my mind the justice and importance of a remark made by Janson, the chief surgeon of the Hotel Dieu at Lyons: "Nous dirons à ce sujet, qu'on ne peut jamais préciser au juste ce qu'on rencontrera dans une tumeur herniaire." This uncertainty as to the contents of every hernial tumour, appears to me to justify and to encourage an early resort to operation, wherever any vestige or remains of hernia exist, in combination with obstinate obstruction of the bowels; and had the operation which was performed in Mrs. Hay's case been done at an earlier period, there is, I think, much reason to believe that her life would have been prolonged.

From the London Medical Gazette.

FACTS AND OBSERVATIONS ON THE PATHOLOGY OF SOME DISEASES RESULTING FROM MORBID POISONS.

Communicated by John Ashburner, formerly Physician to the Small-Pox Hospital, &c.

Twelve years ago I promulgated some curious facts relating to the pathology of hydrophobia, which, though very important, I was from various circumstances not then enabled to give to the world in a sufficiently detailed form. The authors of the article on this extraordinary malady, in the Dictionnaire des Sciences Medicales, regretted the shortness of my notice, and some doubts were consequently thrown upon the nature of the disease upon which the observations were stated to have been made. The kindness of my friend Mr. King, of Clifton, to whom I am indebted for extracts from his journal, has enabled me to remove these, and I shall hope that the recital of the circumstances connected with his experiments and observations will lead to further investigation.

A question of no inconsiderable importance in the pathology of diseases resulting from morbific poisons, suggested itself to the mind of Dr. Darwin, in the consideration of hydrophobia, as to the period after inoculation when excision of the inoculated part might be performed with a prospect of arresting the progress of the disease. He says, (Zoonomia, vol. iv. page 50,) "If the patient were bitten in a part which could be totally cut away, as a finger, even after the hydrophobia appears, it is probable it might cure it; as I suspect the cause still remains in the wounded tendon, and not in diffused infection tainting the blood. Hence there are generally uneasy sensations—as cold or numbness in the old cicatrix—before the hydrophobia commences."

Dr. Babington held the opinion that there is a specific period, (Medical Records and Researches of, &c. page 127,) prior to which the disorder may at any time be prevented by the removal of that part whence the matter was at first introduced.

It would be very desirable to ascertain the precise period of time at which the inoculated part in small-pox, or in the milder variety of the same disease, cow-pock, may be removed to prevent the accession of the constitutional affection; and to determine whether its removal after the disease had supervened would modify the subsequent train of symptoms. The tissues most particularly influenced by the application of certain morbific poisons are not yet sufficiently distinguished; and the changes of organization which these tissues undergo, form a subject of inquiry as interesting as it is important.

Inoculators of the vaccine virus are in the habit of observing the irregularities which take place in the progress of the pock, if at any stage its structure be materially injured. The object of vaccination may have been more often frustrated by accidental injury than would perhaps be generally allowed. Having watched with some attention the minute structure of the pock, in its various stages, I shall take this opportunity of illustrating the kind of investigation which is necessary in inquiries into the local changes of organization, induced by the inoculation of morbific poisons.

My friend, Dr. Macartney, whose well-known zeal for the improvement of science is beyond all praise, has made an admirable attempt to classify diseases of the skin according to a natural arrangement. In the diseases which he places under the term *varicodes*, the first specific change of structure is in the cellular tissue which surrounds the villi of the true skin; this texture interposes itself between the cutis and cuticle, and obtains the name of rete mucosum. If a pock be observed in its earliest stage, there is perceived a few blood-vessels determining to a central point, and a pimple results, which has a hard feeling under the finger. Mr. Cross observes, "that in twenty-four hours this pimple increases so as to prove an acuminated vesicle." (See Cross's Hist. of the Varioloid Epidemic, &c. page 135.) The acumination disappears, and about the fourth day the centre of the eruption is depressed, for a cellular arrangement obtains, which having been pointed out by Dr. Macartney to Mr. Cross, was by him likened to "the axis, spokes, and circumference of a wheel," (page 136.) These cells are formed by the attachment of the central portion of membrane to an inflamed part of the villous surface of the true skin, and they are filled by a fluid, which is at first limpid, but which in time becomes less transparent, distending the pock, and giving it somewhat the appearance of a portion of a white currant. On the sixth day the central indentation disappears, the fluid of the cells becomes inspissated and glutinous; the villi of the cutis, which had been embraced by the delicate cellular membrane, inflame, and about the eighth day pour out pus. The wheel-like organization is now gone, for the cells have been consolidated by the agglutination of their contained fluid, and they form the upper covering—the membranous dome of a small abscess, the floor of which is a highly inflamed tuft of cutis.

There is a tendency in severe cases of small-pox for this villous tuft to die; it may in time form the slough described as distinctive of the small-pox pustule. If it should not die, a recovery of the part takes place, and no cicatrix is left: when it dies, a slough is thrown off, the consequence of which is a puckering of the skin; the loss of substance always leaving a very irregular-shaped scar, having a tail-like extremity, a distinction by which the small-pox cicatrix is known.

In the small-pox which occurs after vaccination, it is not uncommon, about the fifth day, to find the eruption converted into small horny buttons; for the villi have not been highly inflamed. They soon recover themselves, but the cellular structure, having been amply filled with a glutinous lymph, is left in a hard and darkened state; it is tough, and remains for days without much apparent change, for the diseased action having been mild, and not attended by energetic inflammation, the absorption of these hard buttons is very slow.

In the scabbing stage of the cow-pock the regularly agglutinating process is easily observed. The cells become gradually consolidated; for the fluid thickens, becomes hard, and at last a scab is formed, beneath which ulceration has removed a small portion of the villi of the cutis, and has left the slight mark peculiar to a mild and uninjured progress of the pock.

In the diseases of this nature, in which the constitutional irritation precedes the specific organization, there would seem to be no period at which its approach could be arrested. Considerable danger occasionally attends an attack of variolous fever, even in persons who have previously been perfectly vaccinated. I have known several cases in which death has taken place on the third day of the febrile action, the patient having been at that period covered with petechiæ, instead of the pimples which should have appeared.

In the inoculated cow-pock, the constitutional irritation cannot precede the specific change of structure; and in some cases it is very difficult to say when the constitutional influence has been established. Experiments have not yet decided whether the extirpation of the newly-organized structure would check the advance of the disease.

We know nothing clearly of the change of organization which takes place at various periods in the part inoculated with the hydrophobic poison. The following detail, put together from information afforded by Mr. King's journal, will show that the investigation of the point has not been wholly unattended to.

On the 12th of March, 1807, Dr. Beddoes and Dr. Stock accompanied Mr. King to the village of Weston, near Bath, for the purpose of seeing a rabid cow, that was shut up in a barn at Farmer Wintle's. They observed the animal from an open window above its reach, and opposite to them was a strong barricade, about seven feet high, which divided that part from the rest of the barn. The space of the floor thus partitioned, in which the cow was placed, was about 20 feet by 14. She was excessively furious, and bellowed very loud; frequently attempted to leap over the bar, and several times nearly succeeded. Sometimes she ran with violence against the wall, and fell down in convulsions. A wooden block was let down from the window, at which she ran with great fury, and tossed it about. A bucket of water was similarly let down, but before it came to the ground she plunged at it and overturned it. Upon the water being splashed about, she fell into violent convulsions. Her eyes were much blood-shot.

Mr. King observed her for about two hours,

and at one time she was seen attempting to eat a little hay; but it was soon vomited again, and she then voided a small quantity of black hard dung, to which she turned round, and in a short time ate it up.

The author of the article Dog, in Rees's Cyclopædia, mentions that some dogs affected with rabies will eat their own excrement, and lap their own urine. Rabid dogs are said not to evince any dread of water. It must be remarked that this cow exhibited the hydrophobic symptom; and within three or four months of the period at which she had this disease, in all that part of Gloucestershire lying northward between Bath and Bristol, the villages of Pucklechurch, Syston, &c. a very unusual number of such cases had occurred among cows, horses, and other animals.

Farmer Wintle informed Mr. King, that about two months before several rabid dogs had passed through the field in which his cow was placed, but they had not been observed to bite her. She had calved about a month before this time. It was on the 8th of March that she had been perceived to be different from her usual way. In the evening she was very unruly, and frightened the woman who went to milk her. On the following morning she quietly submitted to be milked: in the evening of that day she foamed at the mouth, ran about in a very wild manner, and rushed at people with her mouth open, as if to bite. She was then confined in the barn.

Mr. King was desirous of trying an experiment with the saliva of this cow, and, accordingly, in one of the attempts she made to leap over the barricade, her head projecting over it, he succeeded in obtaining on his hands an immense volume of foam which was discharged from her mouth.* He had made two incisions under the wings of a common barn-door hen, quite through the integument, the lancet scratching the musclar part. The foam immediately taken from the cow's mouth was inserted, by rubbing, into these cuts. The fowl was confined in a basket, her head projecting through an aperture; she was secured in such a manner as to prevent her from pecking at the incisions; and thus the bird was sent to Dowry Square, in Dr. Beddoes' carriage. The next day this fowl was let loose, among others, in a poultry-yard at Mr. King's residence. On examining it from time to time, the incisions were found to be soon healed, and their place could with difficulty be discovered. The habits of this fowl appeared to be exactly like those of the rest. On the 25th May, however, she was observed to run at the other fowls, and she refused her food. She had a wild, strange expression, and her eyes were bloodshot. Early in the following day, her legs became contracted, so that she very soon lost the power of standing upright. She remained sitting, with the legs rigid, a long time, refusing food and water, and appearing very irritable when touched. She died in the evening, immediately after readily drinking a large quantity of water, which had been offered to her.

Early on the morning of the 27th of May, this fowl was examined by Dr. Macartney. The inoculated parts appeared recently inflamed. There was great vascularity about the cicatrices, which exhibited three small tumours, each about the size and shape of a compressed pea, the vessels of which were turgid with blood. At the time of the inoculation, Mr. King observed no injected appearance about the parts, nor was such apparent when the bird had been examined at any subsequent period. The trachea and œsophagus were considerably inflamed, and the vessels of the brain were distended with blood.

A question which naturally occurs, upon the consideration of these tumours, is, can there be a specific character in the change of organization which appears at the cicatrix of inoculation with rabid poison?

In the year 1822, the sister of one of my servants having been attacked with hydrophobia, was sent by me to the Middlesex Hospital. She had been bitten by a little dog in the hand, about six weeks previously. After exhibiting the usual train of distressing symptoms, unrelieved by the exhibition of very large doses of opium, she died. I could not conveniently attend the examination of the body, but I requested my late friend Mr. Shaw, to pay particular attention to the state of the cicatrix in the hand; and his observation to me afterwards was, that there appeared to be much vascularity about the spot: not having, however, turned his attention to the post mortem state of scars left by lacerated wounds, he was unable to say whether the degree of vascularity was unusual, or whether there was present in the part a structure which could be called specific. Additional and more minute observations are, therefore, wanting, to establish whether hydrophobia be or be not accompanied by a specific organization of the inoculated part.

London, May, 1828.

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* This cow died on the night of the 12th March, and on the 14th was brought to Mr. King's house, in Dowry Square, where he dissected it on the 15th. The brain and spinal marrow were very soft: they were not at all inflamed: the tongue, as far as the root, was natural. The whole surface of the fauces, pharynx, larynx, and mucous membrane of the trachea, was of a dark colour, and in appearance resembled brownish crimson velvet. The pleura costalis, to within two ribs of the diaphragm, was of the same tint: in parts it was putrid. The pericardium was full of a dark-coloured fluid. The cavities of the heart were distended with dark grumous blood. The diaphragm and stomach were healthy. The liver was small, pale, and shrivelled. No bile was perceivable in the small intestines. The spleen was very dark, flabby, and full of grumous blood. The kidneys were in a putrid state. The rest of the abdominal viscera appeared healthy.

From the London Medical Gazette.

MEDICAL STATISTICS.

Abstract of Lectures delivered at the College of Physicians, by Dr. Bisset Hawkins.

Statistics, a science of modern origin, seems to have been first applied to observations on the public health, and to have derived its birth from bills of mortality. It has become the key to several branches of knowledge, opening, in a manner the most convincing, simple, and summary, their gradual progress, their actual condition, their relations to each other, the success which they have attained, or the deficiencies which remain to be supplied. Its application to the objects of government has created political economy; and there is reason to believe, that a careful cultivation of it, in reference to the natural history of man, in health and disease, would materially assist the completion of a philosophy of medicine, by pointing out to physicians of every part of the world, the comparative merits of various modes of practice, the history of disease in different ages and countries, the increase and decrease of particular maladies, the tendency of certain situations, professions, or modes of life, to protect or to expose; and, finally, by indicating, as the basis of prognosis, the extended tabular views of the duration and termination of illness, which are furnished at successive periods by the registers of hospitals.

It is more than probable, that if the doctrines of Brown had been universally subjected to the test of statistics, they would never have obtained so baneful an influence over the practice of continental Europe. Peter and Joseph Frank, two eminent German physicians of that period, eagerly adopted at first the ideas of Brown; but candidly recanted their error, after witnessing the results on a large scale, at the clinical institutions of which they were professors.

The same test may at present be advantageously applied to the opinions of M. Broussais, who is now the chief oracle of medical theory in France. It is well known that he imagines every where a gastro-enteritis, and that his principal remedy is the application of leeches. In the prospectus of his Journal he asserts that his practice has a prodigious success; and that in the hospitals, where it has been adopted, the mortality has fallen from one in five to one in thirty. But examination of the registers of the Val de Grace (the military hospital to which he is attached) has ascertained that, on an average of five years, he has been uniformly less fortunate than his brethren at the same establishment. The mortality has been 1 in 18 under his three colleagues, while that of his own patients has been 1 in 13; and so far is the mortality of his own cases from incurring a gradual diminution, that, from 1816 to 1819, it had rather increased, being, in 1817, 1 in 14; in 1818, 1 in 12; and in 1819, so much as 1 in 8, a very large sum for a military hospital.

Medical statistics afford the easiest proof of the efficacy of medicine in opposition to the vulgar notion (sometimes carelessly countenanced by medical men) that nature is generally alone sufficient for the cure of disease, and that art as frequently impedes as accelerates her course. If we form a statistical comparison of fever treated by art, with the results of fever consigned to the care of nature, we shall derive an indisputable argument in favour of our profession. Of 37 case of fever treated by Hippocrates, (in only a few of which it seems that clysters and suppositories were alone employed,) 21 ended in death—above half of the whole. But at the Fever Hospital of London, in 1825, the total mortality was less than one in seven, although half the deaths occurred within 72 hours after admission. At the Dublin Fever Hospital, the average loss from 1804 to 1812, was only one in twelve; and in the Clinical Wards at Edinburgh, in 1818, the mortality of fever was also about one in twelve. This termination throws no shade over the skill of Hippocrates, but rather brings to light his love of truth: the mortality belonged to the age, and not to the physician; and it may be reasonably inferred, that under other practitioners of his time it was even more severe. We perceive that one out of two cases of fever may recover by the almost unaided efforts of nature; but that, under the medical protection of our own age and country, 6 out of 7, or even 11 out of 12, are likely to survive.

Medical statistics enable us to form the most correct estimate of the influence of certain mechanical improvements in promoting the salubrity of particular districts.

No documents remain to inform us of the rate of mortality, or of longevity, amongst the Greeks. A few facts on these points have descended respecting the Romans. The *expectation* of life calculated for the citizens, and not including the slaves, appears to have been in the third century thirty years. If we select subjects in England of a similar condition, an extension of life discloses itself remarkably in our favour, as the expectation of life for our middle classes is at least fifty years; and for the whole mass of Britain at least forty-five years. The mean duration of life among the easy classes of Paris is forty-two years. The probability of life to the *whole* population of Florence is the same in the present century as that of the *easy* classes of Rome in the third century.

The observances of the Christian religion appear to have revived in modern times the registry of births and burials. At Geneva good mortuary tables have been preserved since 1560, and the results are in the highest degree curious and satisfactory. It seems that, at the time of the reformation, half the children born did not reach six years of age; at present they attain to twenty-eight, so that in the course of about 300 years, the probable life of a native of Geneva is become nearly

five times greater than before. The mean life was thus in one century eighteen years; in the next, twenty-three; in the following one, thirty-two; and during the ten years from 1815 to 1826, the mean life amounts to thirty-six years.*

Captain John Graunt, of London, has the honour of being the first writer who ever directed the attention of the world to the comparative births and deaths of different cities, years, seasons, sexes, diseases,—of the town and of the country,—and to the proportion of births to deaths. In his "Natural and Political Observations upon Bills of Mortality," printed in 1661, he displays a singular genius for observation in a field where no footstep can be traced before his own. The most industrious labourer who followed him, in the same mine, was Süssmilch, who published at Berlin, in 1742, his "Gottliche Ordnung." The gradual accumulation of registers in the principal states of Europe had prepared for him a copious stock of materials; but the fruit was not as yet sufficiently ripe to afford a valuable harvest. His object seems to have been rather to draw certain general conclusions which apply to the whole civilized mass of the globe, than to balance the comparative degrees in which various countries and cities enjoy, or are deficient in, health and longevity.

Süssmilch estimates the nearest average of mortality of all countries, (taking towns and villages together) as 1 in 36. Busching, a celebrated geographer, calculates it to be from 1 in 32 to 1 in 37. About eighty years have since elapsed, and a surprising improvement in the physical condition of man has progressively developed itself. In almost every civilized country of Europe, we find the annual proportion of deaths considerably diminished, and continuing actually to diminish, relatively to the particular circumstances in which each country is placed; and, in Britain, the value of life is nearly doubled, if we compare Busching's rate of 1 in 32 with the rate afforded by the census (taken in 1821) of about 1 in 60.

Dr. Odier, of Geneva, in the 4th volume of the Bibliothèque Brittannique; and Dr. Heberden, in his valuable "Observations on the Increase and Decrease of different Diseases," published in 1801,—appear to be the earliest authors who had the merit of revealing this improvement of life in their respective countries.

Sir Gilbert Blane, Mr. Rickman, Mr. Milne, and Mr. Finlaison, in England; Dr. Villermé, in France; and Dr. Casper, in Germany, have subsequently pursued with zeal the same path of inquiry, and have obtained conclusions the most interesting to human nature, because almost uniformly agreeing in its tendency to amelioration.

The mean duration of life to the middle classes of Britain appears to have been thirty-seven years at the close of the 17th century, and to have risen to fifty-two years at the expiration of the 18th century. A corresponding change in the health and duration of life of our entire population has equally arrived.

In 1780 the annual mortality of England and Wales was 1 in 40.

In 1790	1 in 45.
In 1801	1 in 47.
In 1811	1 in 50, or 1 in 52.
In 1821	1 in 58, or 1 in 60.

So that, on the whole, it has decreased from 1 in 40 to 1 in 58, in forty years.

The annual mortality of the several counties of England, ranges between 1 in 47 and 1 in 72;—Middlesex and Sussex are the two extremes. In Wales, Pembrokeshire and Anglesey have only one death yearly among 83 individuals—the lowest genuine rate of mortality that has been published in any part of Europe. Even in Middlesex, where the rate is higher than in any other county, let us remark the change which has supervened in only ten years;—in 1811 it was one in 36, but in 1821 it was only 1 in 47.

But the decline of mortality is even more remarkable in our cities than in the rural districts. It is well known, that, in any given country, the deaths of a city are more numerous than those of the rural districts. This difference is chiefly felt in the first five years of life, when many more die in London than in the country. From 5 years of age to 20, the deaths are fewer in London; from 20 to 50, more numerous, on account of the large annual influx from the country. In all cities, a portion of disease and death is to be assigned to the constant importation from the country of individuals who have attained to maturity —but, having been previously habituated to frequent exercise in a pure atmosphere, and to simple regular diet, are gradually sacrificed to confined air, to sedentary occupations, or to a capricious and over stimulating food. These causes are not equally fatal to those who have passed their early years within the walls of a city; and, after the age of 50, the proportion of deaths in London is smaller than in the country. Jenner, and, very recently, Dr. Baron, have made some experiments on animals, which indicate that a loss of open range, and accustomed nourishment, has with them also a tendency to disorganize and to destroy.

Not only the comparative mortality of London is greatly diminished during the last fifty years, but its absolute mortality in respect to preceding centuries. In 1697, the deaths were about 21,000; but in 1797, only 17,000. In 1826, the deaths were less numerous, by 3000, than in 1766; although, during all this time, the population has so rapidly multiplied. The annual mortality in 1700, was about 1 in 25. About 1720, it seems to have increased to 1 in 20; to have maintained that proportion to 1750, and, from that period to the present, to have exhibited a constant and gradual decline. In 1801, the decrease was to

* Vide Journal of Foreign Medicine, vol. ii. p. 95.

1 in 35, (or, as corrected by Price, 1 in 30.) In 1811, we find 1 in 38; and finally, in 1821, so low an average as 1 in 40.

From the returns of ninety-nine parishes of Scotland, which alone were given in the Population Abstracts of 1801, it appears that the average mortality was 1 in 56. I have not been able to ascertain how nearly Scotland has since kept pace with England and Wales. During the ten years, from 1801 to 1810, the average annual mortality of Glasgow was 1 in 43. During the next ten years, from 1811 to 1820, it declined to 1 in 45.

It would be interesting to derive some information from Ireland on this point; and we must regret that no correct parochial registers have been kept to elucidate the condition of that country.

On the continent of Europe, changes in the duration of life have been experienced, similar in nature, and following the same laws, as those of our own country, but very inferior in degree. In France, for instance, the annual deaths were, in 1781, 1 in 29; in 1802, 1 in 30; in 1823, 1 in 40. In Paris, about the middle of last century, the mortality was 1 in 25; but, at present, it has decreased to 1 in 32.

In Sweden, from 1755 to 1775, the average was 1 in 35; from 1775 to 1795, 1 in 37; in 1823, 1 in 48.

The mortality of Great Britain, its cities and its hospitals, appears greatly inferior to that of any other country in Europe; and it seems incontestible that Great Britain is the most healthy country with which we are acquainted, and that it has been gradually tending towards that point during the last fifty years. It has been long the fashion, both abroad and at home, to exhaust every variety of reproach on the climate of our country, and particularly on the atmosphere of London; and yet we shall find that the most favoured spots in Europe, the places which have been long selected as the resort of invalids and the fountains of health, are far more fatal to life than even our great metropolis. The proportion of deaths at Montpelier was greater thirty years ago, and is greater at present, than in London; and, although it is usually much larger in cities than in provinces, yet it is exactly the same in London, and for the department of the Herault, the southern, fertile, and long supposed most salubrious district of France, of which Montpelier is the capital. The annual mortality of Nice is about 1 in 31; of Naples, 1 in 28; of Leghorn, 1 in 35.

At Berlin, it is 1 in 34; Paris, Lyons, Strasburg, Barcelona, 1 in 32; Madrid, 1 in 29; Vienna, 1 in 26; Rome, 1 in 25; Amsterdam, 1 in 24.

If we compare country with country, our superiority is equally striking. The country which approaches most nearly to us is the Pays de Vaud, where the annual deaths are 1 in 49; in Sweden and Holland, 1 in 48; in Russia, about 1 in 41; in France, 1 in 40; in Prussia and Naples, 1 in 33 to 1 in 35; in Wirtemberg, 1 in 33.

The principal end of hospitals is the relief of the sick poor, but another benefit may be derived from them,—an abstract of the results of their multiplied experience, without which their instruction to our profession and their utility to the public, are considerably abridged.

Mr. Milne remarks, that in reading the writings of the physicians who have treated these subjects, it is impossible not to regret that they have been so little attended to by the profession in general; and that bills of mortality have not been more generally kept, in such a way as to throw the light, which they alone can do, on the causes of the increase and decrease of different diseases; and of the great differences that are found between the degrees of mortality in different situations, and among different classes of the people.

Some persons appear to have hastily concluded, that the mortality of an hospital affords little information as to the economy or practice prevailing in it; and have even ventured on the paradox of supposing that the deaths will become more numerous as the discipline improves, and as the skill of the officers increases; because, under such circumstances, the most severe cases alone will be selected, and will be speedily discharged, to afford room for new ones. This argument appears to be founded chiefly on a solitary fact, originally proposed by Joseph Frank, namely, that in the ninth year of the French Republic, the mortality at the Hôtel Dieu was 1 in 7, and yet in the next year rose to 1 in 6, although the interior economy was much ameliorated; and in the following year even to 1 in 4. But the real solution of this change appears to be due to the exclusion from the Hôtel Dieu, at that time, of all pregnant and insane cases, such as had been previously received there in abundance, whose mortality is much less than that of the common objects of a general hospital, and whose presence, accordingly, tended to diminish the annual amount. In respect to hospitals destined for particular complaints, as the Lock, or the St. Louis of Paris; or in regard to lying-in, or military hospitals, it would be unjust to form comparisons, except with others of a similar kind: but the general hospitals of the principal cities of Europe may be fairly approximated, with an occasional allowance for position, or for some accidental peculiarity, such as the larger number of violent injuries which occur in great commercial cities: it is probably on this last account that the mortality of St. George's hospital is greater than that of the Edinburgh Infirmary; in 1825, of 1025 in-patients admitted at the former, 664 were cases of accidents. On the whole we shall find, that in every city the mortality of the hospitals has usually declined in proportion to the increase of prosperity, and to the diffusion of knowledge; and that, wherever it maintains a high standard, the lower orders will generally correspond in their condition of want and degradation, and the profession of medicine will be seen to occupy a subordinate rank in public esteem.

It has been calculated that the 20th part of every population is labouring under illness, and that the 100th part suffers some severe disease. But the average of sickness and of recovery is constantly fluctuating under the influence of single seasons; of plenty and of scarcity, of the spirit of the times, and of political events.

The earliest notice of the mortality of our own hospitals, is contained in Sir Wm. Petty's work on Political Arithmetic; from which it appears, that in the year 1685, the proportion of deaths to cures at St. Bartholomew's and St. Thomas's hosp tals was about 1 in 7. In the printed report of St. Thomas's hospital for 1689, the mortality is about 1 in 10. The first annual report of St. George's hospital for 1734, when patients were first received, yields a proportion of about 1 death in 8 patients.

The mortality of St. Thomas's hospital was in 1741 about 1 in 10; from 1773 to 1783 1 in 14; from 1783 to 1793 1 in 15; from 1803 to 1813 1 in 16.

The annual average of deaths at Christ's hospital, during the 40 years ending in 1799, was 1 in 150.

The mortality of the Edinburgh Infirmary appears to have ranged during the present century, between 1 in 14 and 1 in 20, or even 1 in 21.

The mortality of Heriot's hospital, at Edinburgh, has been only 1 in 235 annually, during the last 17 years. It is composed of children from the age of 7 to 14. The average mortality of some other public establishments at Edinburgh appears to be very low.

The average mortality of the Fever hospital, at Dublin, has been considerably diminished since the commencement of the present century.

The annual average from 1804 to 1812 was about 1 in 12; from 1812 to 1814 1 in 15; in 1815 1 in 20.

The mortality in France is much greater among the lower classes than the affluent ones. It even appears, that in the wealthy departments of France life is protracted 12½ years beyond its course in those which are poor. Precisely the same result is observed in the rich and poor quarters of Paris: where 50 deaths occur in the rich arrondissements, about 100 happen in the poorer ones.

The average mortality of all the hospitals of Paris, in 1822, was 1 in 8. 42; of all the hospices, 1 in 6. 71.

The average stay of each patient in the hospitals was about 35 days.

The total mortality at the Hôtel Dieu, was, in 1822, 1 in $6\frac{82}{100}$; and the average stay of each patient was about 25 days. If we examine the progress of several years at the Hotel Dieu, a slow, but gradual improvement will appear. Between 1770 and 1780 the mortality was about 1 in 4: at this period it would be difficult to imagine, as some have done, that high mortality is a proof of well-regulated hospitals, since Hunczowski declares that he often saw, on the same bed, a dead body lying by the side of two dying patients, and one convalescent. From 1804 to 1814 the deaths were rather more than 1 in 5.

In the Charité hospital, at Paris, the total mortality was, in 1822, 1 in $5\frac{53}{100}$. The average stay of the patients was about 30 days.

The number of children abandoned by their parents is at Paris enormous: in 1826 these wretched beings amounted to above 8000. In 1818, 120 died out of 133 thus exposed. Of 1000 foundlings, at Paris, 251 have been ascertained to die during the first few days, and 235 more on their road to the country nurses, or before the end of the first year.

In the provincial hospitals of France the mortality is less than in those of the metropolis. At Lyons, for instance, the mortality of the Hôtel Dieu is about 1 in 11; and, at Montpelier, the average of all the medical institutions is about 1 in 10. We may remark, that, as the mortality of great cities is usually superior to that of towns, so the annual deaths of metropolitan hospitals will usually exceed the proportion of provincial ones;—and, generally, that in any large hospital the proportion of deaths will exceed that of a small one.

The mortality of Berlin has progressively diminished. From 1747 to 1755 the annual rate was about 1 in 28; from 1796 to 1799 1 in $29\frac{1}{11}$; from 1802 to 1806 (suffering from war) about 1 in $27\frac{1}{4}$; from 1816 to 1822 1 in $34\frac{3}{11}$.

The mortality of the Charité, the chief general hospital, on an average of 20 years, from 1796 to 1817, has been about 1 in 6. And yet, in this high mortality, must be included a large supply of lying-in women, and of the insane, whose presence should lower the total sum of death.

Dr. Casper, of Berlin, published in 1824 an interesting collection of statistical facts, illustrative of the influence of vaccination on that city. In 1789 one death out of every nine deaths in Berlin was occasioned by small-pox; but from 1820 to 1822, only 1 death in 1635 deaths was the result of small-pox. He combats, by authentic documents, the notion that the other diseases of infancy have become more fatal since the introduction of vaccination.

The annual mortality of Vienna was estimated in the middle of last century at about 1 in 20. In 1810 Wertheim brings it to about 1 in 24. Since that time, it has again undergone a slight improvement, and is about 1 in 26. The great hospital at Vienna includes a variety of clinical and other establishments; the annual mortality of the whole is about 1 in 6. In 1810 above half the foundlings received, annually, perished. Since that time their mortality has been considerably lessened by the sending them into the country to be nursed.

At Pesth, the present capital of Hungary, the annual deaths at the civil hospital were, in 1825, of exactly similar proportion to those at the hospital of the metropolis of Austria,

under whose mistaken policy it equally languishes.

The mortality of the small cities of Germany appears to be often half, or even one-third of that which prevails in the great ones.

The change in the duration of life which has taken place in the kingdom of the Netherlands has rendered the old tables of the probabilities of life, formed by Kerseboam, insufficient for actual use, and M. de Quetelet has recently constructed a new scale. His inquiries have brought to light many curious facts. The value of life in Holland seems to have doubled itself since the middle of last century. Sussmilch then estimated the annual mortality of 39 villages of Holland at about 1 in 23; and at present we find the average mortality of the whole kingdom to be 1 in 48. The mortality of the hospital St. Pierre, at Brussels, was, in 1823, about 1 in 9 among the adult patients, and about 1 in 6 among the children.

The population of Amsterdam has decreased, in consequence of declining commerce; and its mortality increases with the progress of decay. The mortality in 1777 was about 1 in 27; it was recently about 1 in 24. The average mortality of the chief hospital, (St. Pieter's Gasthuis) during the 20 years from 1798 to 1817, was about 1 in 8.

The returns formerly afforded by Russia presented such extraordinary results that a general belief prevails of their surcharges and colouring; as when, in the progress of the Empress Catherine, artificial edifices were created in the distance, to amuse with an image of prosperity. The annual average of deaths at the imperial hospital for the sick poor, at Petersburg, has been for the 20 years ending in 1817, so high as 1 in 4½.

The mortality of the two chief hospitals of Madrid was, in 1818, about 1 in 11. The report, however, is not very authentic, nor minute. At Barcelona, during 1823, the general hospital of Santa Cruz afforded about 1 death among 7 patients.

The annual mortality of Geneva is greater than that of Manchester, and is about the same as that of Glasgow and Birmingham. The mortality of its hospital in 1823, was about 1 in 11; but about a third part of the patients were soldiers, whose presence generally lowers the sum of fatality.

The proportion of deaths to recoveries at the general hospital of Genoa was, in 1821, 1 in 6. At the hospital St. Giovanni, at Turin, it was in the same year 1 in 7.

At Milan, the mortality of the great hospital, during the three years ending in 1814, was about 1 in 6. In 1823, it was about 1 in 7.

At Pavia, where the most minute records are preserved, the total mortality of the hospital San Matteo della Pieta was, in 1823, about 1 in 10. The mortality of Hildenbrand's Medical Clinic was less than 1 in 6.

The mortality of the Medical Clinic of Padua, at which Brera is Professor, was in 1821, about 1 in 11. At that of Bologna, where Tommasini is Professor, it was, about the same period, 1 in 10. We perceive the care and skill of these eminent men evinced by the degree in which they have counteracted the ordinary course of mortality in the Italian hospitals. That of the Santa Maria Nuova, at Florence, is 1 in 7; of the hospitals at Leghorn 1 in 7½; of those at Rome about 1 in 7. At the Foundling hospital of Naples the annual loss is 1 in 5; about the same occurs at Stockholm.

Some details might be adduced, which prove that the deaths of the patients at a London Dispensary are proportionably less numerous than at similar institutions at Berlin and Geneva.

The most prominent fact afforded by medical statictics, next to the diminished mortality of infancy, is the beneficial change which has supervened within the last 100 years in the fate of lying-in women.

In 1750, at the British Lying-in Hospital of London, 1 woman died out of 42 admitted. In 1780, only 1 died out of 60. And, finally, the improvement became so great in the ten years between 1789 and 1798, that only 1 case was fatal out of 288.

Tenon assures us, that the mortality of lying-in women at the Hôtel Dieu (where they were formerly received) was so high as 1 in 15, at the very time when in the British Lying-in Hospital it was only 1 in 60; and the still-born were 1 in 13 at the former, when only 1 in 25 at the latter.

The mortality of the Lying-in Hospital at Paris was, in 1822, 1 in 30; but at the City of London Lying-in Hospital, the deaths, in 1826, were only 1 in 70; and at the Dublin Lying-in Hospital, the average deaths of 57 years have been only 1 in 93.

The deaths at the Lying-in Hospital of Stockholm were, in 1822, nearly the same as at Paris—1 in 29.

At Berlin an improvement has taken place in this respect. From 1796 to 1806, 1 woman died out of 32 admitted into the Charité; but in the ensuing ten years, only 1 in 45.

The varieties in the proportion of the still-born in different places are very difficult of explanation. In Prussia, 1 child in 32 is still-born; in Hanover, about 1 in 30. In Sweden and Finland, about 1 in 40. On the contrary, at Strasburg, on an average of 20 years, the proportion has been 1 in 11, and is at present 1 in 12½.

The still-born are generally more frequent in towns than in the country, and more common among the poorer classes than the affluent. At Stutgard it has been remarked, that the still-born increase nearly in the same degree in which the illegitimate births are augmented.

We have some curious details on the mortality of prisons, from France; but few from other countries. The highest mortality any where known among adults seems to arise at the Depôt of Mendicity of St. Denis, where 1 individual dies annually out of 3 admitted. In all the other prisons of Paris, the annual deaths are about 1 in 23. On the contrary, those of the galley-slaves, who live much in the open air, are only 1 in 49.

So great was the care taken of prisoners of war in England, that in 1813, only 1 died out of 55, although labouring under most of the privations which embitter and enfeeble existence.

The superior health enjoyed by the British army and navy, when at a distance even from home, has often been a subject of surprise and exultation. Let us go back above half a century, and hear the opinion of a distinguished foreign historian. Alluding to the events of the seven years' war, Muller observes, that the resources of military talents were never more successfully applied than by the Britons during that contest: so much care was taken to provide for all the wants of the soldiery, that the ordinary mortality among the wounded was not more than 1 in 20; and out of 14,000 men who were employed in the year 1760 in cruizing in the Bay of Biscay, scarcely 20 were attacked by disease.

If we follow the steps of the late war, we shall discover many results equally remarkable. Assuredly no ancient nor modern general has ever been so deeply indebted to his medical companions as the chief of our Peninsular troops.

Even on the barren rock of Gibraltar, the mortality of our garrison was only 1 annually in 48, according to a recent report, and exclusive of the years in which epidemic fever prevailed.

Very different was the fate of the disabled soldier in remoter times. It appears that each Roman legion, containing from 3 to 4000 men, had only one medical officer attached to it.

To mark the improvement of health in our navy, we may compare the fate of Commodore Anson's crew with a ship placed in similar circumstances about fifty years subsequently. Anson passed 143 days at sea, without touching at any place of refreshment. On his arrival at Juan Fernandez, half of his companions alone survived, and of the remaining 200, only 8 were efficient. But in 1794, the Suffolk, a 74 gun ship, during 162 days had no communication with land, and arrived in India without the loss of even one man, and with no case of severe disease at the time of disembarkation. The success which attended the efforts of Cook, and, subsequently, of Captain Parry, in checking the inroads of disease upon their crews, is universally known. The total mortality of our navy, in all parts of the world, including those who were lying in hospitals, was, in 1813, only 1 in 42.

A portion of the good health enjoyed by our army and navy must be ascribed to moral causes, such as national spirit, and general success. The operation of moral causes on the health of soldiers was strongly evinced in the French army during their disastrous campaigns of 1813 and 1814: the number of its diseases preserved a terrible proportion to its losses, and increased with every failure.

Suicide is so frequent a topic of allusion in medical writings, and so often depends on a deranged state of body or mind, that it seems to merit a place in medical statistics. We have here a very pleasing conclusion to draw in respect to our own country, as, in spite of ancient prejudices entertained against our supposed propensity, it really appears that the English are *less* disposed to suicide than any other people who have attained a similar grade of civilization. If we should even quadruple the usual return in the bills of mortality, the suicides of London would still fall greatly short of those of other capitals.

The population of Westminster is above 182,000. The annual average of suicide during the 13 years ending in 1825, has been only 22. During the last eight years a reduction of nearly six suicides has taken place on the average of each year. In 1817 and 1821, the amount was only 17. Far from November being the most influential month, its average was only 2, while that of June was nearly 3. The proportion of male suicides to female was so much as 5 to 2. Nearly the same proportion of the sexes occurs also at Paris, where the suicides appear to be often five times more numerous than in London, in proportion to the population. In the first six months of 1819, the suicides at Paris were about 200. The persons taken out of the river alone amounted, in 1820, to 260; in 1821, to 309. In Prussia, the increase of suicide, and its present height, are very remarkable. In 1818, the total number was 650; but in 1822, so large as 859. At Berlin, from 1788 to 1797, one suicide appeared amongst 900 deaths; but from 1813 to 1822, there was one in 100 deaths. At Copenhagen the proportion has lately been 100 annually amongst 100,000 inhabitants. Even at Rouen, the number in a recent year is as large as that of London. In 1793, a stormy period for France, 1300 are said to have occurred at Versailles.—Amongst nearly 152,000 persons insured at the Equitable office, only 15 instances happened during 20 years.

We are compelled to attach a much lower importance to the influence of climate, both in health and disease, than was formerly assumed. In Europe, at least, the maladies of the individual seem to depend much more upon his habits, condition, and occasional local peculiarities, than upon the varieties of climate. Even in tropical climates, a large proportion of European mortality must be ascribed to the neglect of a congenial diet, and to a deficiency of self-control. Neibuhr, who saw all the companions of his travels perish around him, imputes their fate to their European mode of life. It has been thought that females suffer less from the change of climate than men; and their more regular and cautious habits may probably form an outwork.

In the epidemic cholera of India, the mortality of the European troops was greatly inferior to that of the natives; 27½ out of 100 of the former, were cut off; but so overwhelming a proportion as 80 among 100 of the latter.

Humboldt has furnished some details of the rate of mortality in New Spain: the average

of the whole kingdom was 1 in 30 annually. Mr. Bristed states the average of annual deaths throughout the United States to be 1 in 40.

The influence of climate in Europe is most visible in the various fatality of the same months to different cities. The axiom of Celsus on the seasons is not at present applicable to the northern capitals. In London, the autumn now appears the most healthy; after it, in succession, the summer and winter; and least of all seems the spring. Paris and Berlin correspond nearly with London; but Montpelier, Padua, and Milan, reverse the order.

When we speak of a healthy climate, it is gratifying to reflect, that, in most instances, it is man himself who has created these climates of health. Machiavelli, in his early epoch, anticipated this great truth: he remarks, that unhealthy countries become wholesome through the population which cultivates them.

Poverty, cold, and moisture (the two last of which are generally included in the first) are the most powerful enemies to the enjoyment of health and longevity; and affluence, on the contrary, is the strongest safeguard of the body. Epidemics are the offspring of misery, and upon the poorer classes their principal ravages are exhausted. Of an equal number of infants chosen among the poor and easy classes in France, the proportion of deaths among the former is found to be double. The mortality of women is, in some countries, and particularly in England, less than that of men, because they are more secluded from the conflict of life, and are less exposed to weather and to severe labour. In France, the mortality of the sexes is nearly the same, because the female of humbler rank there performs a large part of the manual and out-of-door employment. The conservative tendency of an easy condition is marked by the very inferior degree of mortality and of disease which occurs among insured lives—and generally among any large societies composed of persons in the enjoyment of competence. At the Equitable office, it was found, in 1810, that the actual deaths which had occurred among 83,000 persons insured during 30 years, were in the proportion of only 2 to 3 of what had been anticipated from the Northampton tables. The annual mortality at the Equitable, from 1800 to 1821, was less than 1 in 81 annually. At the University Club it has been, during 3 years, only 1 in about 90, annually. The annual deaths at the Edinburgh High School and Academy, are only 1 in 833. Far different is the fate of the slave: a fifth or sixth part of the negro slaves was formerly computed to perish annually; and of 20,000 exported to Rio Janeiro in 1823, 1400 had died on the voyage—which is, nevertheless, an improved report of a slave ship.

A remarkable table has lately been published by Mr. Morgan, illustrative of the increase and decrease of diseases in this country. It comprises the diseases (certified by the medical attendant) which were fatal among nearly 152,000 persons insured at the Equitable, from 1800 to 1821; of every age from 10 upwards. The greatest number of deaths under any head, is 262 for "natural decay and old age." This item is nearly a seventh part of all the deaths. Next follows apoplexy, 242; consumption, 153; general fever, 146; dropsy, 137; palsy, 116; dropsy of the chest, 100; diseases of the liver, 79; inflammation of the bowels, 77—of the lungs, 73. Only 8 from calculous disorders. Angina pectoris yields 44 deaths; gout, 26; but small-pox, measles, and scarlet fever, not one. The deaths from consumption are scarcely 1 to 12; whereas, in the bills of mortality, they are at present 22 per cent.; and at the end of last century were 26 per cent.;—two facts which seem to indicate that it is less prevalent than formerly.

After enumerating so many varieties in the distribution of mortality, it remains to consider the causes which diminish it, and which have, in our own country, rendered that diminution so conspicuous.

The particular causes have been long generally admitted: such as improvements in ventilation, and in the general economy of hospitals; the general adoption of a more rational treatment of disease, and particularly of the antiphlogistic plan. They chiefly affect disease already formed, and promote a fortunate termination.

The general causes act on the entire mass of a nation, and operate in the prevention of disease. Among these, the increase of agricultural and commercial industry has multiplied the comforts of the lower classes, and has enabled them to procure a more spacious dwelling, more frequent changes of clothing, and food more abundant and more wholesome; insomuch that the average mortality and health of every nation are mainly determined by the degree in which its government has encouraged these pursuits, or has checked their free course. So intimate a connexion subsists between political changes and the public health, that, wherever feudal distinctions have been abolished, wherever the artisan or the peasant have been released from arbitrary enactments, there also the life of these classes has acquired a new vigour; and it is certain, that even bodily strength, and the power of enduring hardships, are divided among the nations of the earth in a proportion relative to their prosperity and civilization.

We may easily conceive the different frame of body and of mind which is likely to grow upon the unemployed inhabitant of a decayed city, who gloomily wanders, without an object, through silent streets, whose pavement is choked with grass; and upon the active citizen, who feels himself a constituent member of a flourishing community, and who is attracted on all sides by invitations to the exercise of his faculties.

It is indisputable, that the average propor-

tion of deaths in England and her cities is less than that of any other country in Europe. And it may be added, that the powers of body and of mind are preserved to a late period, in higher perfection here than in other countries; —nowhere are the advances of age so slowly perceived, and nowhere so little manifested on the exterior. An analogous condition of vigour may be also observed in our animals, and in our vegetation; and if it should be replied, that this excellence is owing to the care bestowed on their culture, the answer applies equally to the human being, on whom more attention is here lavished, and who is really here an object of greater value than elsewhere.

If political and moral circumstances actually possess so preponderant an influence on the production of disease, and on the guidance of its fatality, it seems to be incumbent on our profession to study their progress, and to profit by their results. A peculiar set of diseases appears to belong to every age; and it may almost be affirmed, that there is also a mode of treatment adapted to every age.

From the Medico-Chirurgical Review.

REDNESS OF THE INNER SURFACE OF BLOOD-VESSELS.

As this phenomenon leads many people astray, in their speculations as to its causes and effects, we shall take this opportunity of stating the sentiments of Laennec on the subject, as they are entirely in consonance with our own observations.

Corvisart noticed this redness, but avowed his ignorance of its nature and cause. Frank observed it throughout the whole course of the arterial system, and concluded that it was the cause of a peculiar and uniformly fatal fever! The same opinion has been adopted by Kreysig, Bertin, and Bouillaud. But, let it be remembered, that mere redness of a part naturally white, does not authorize us to pronounce it in a state of inflammation. The phenomenon is frequently seen on the inside of the aorta and pulmonary artery. The colouring is of two kinds, scarlet, and a violet hue. Sometimes the redness is confined to the inner membrane—at other times, it penetrates the fibrous, and even the cellular texture. The colour is quite uniform, as if painted, and without any trace of vascularity. Sometimes this stain diminishes progressively from the origin of the aorta; but frequently it terminates abruptly, with irregular edges. In the midst of a very red portion, we sometimes see a circumscribed spot of the natural white colour. When the aorta contains very little blood, the redness only exists in the part in contact with this fluid. The surface of the sigmoid and mitral valves sometimes exhibits this phenemenon—occasionally the whole of the arterial system. Sometimes the auricles and ventricles alone are tinged—and then it is observed that he heart is full of blood, and the arteries nearly empty. The redness is attended by no appreciable thickness of the membrane, and entirely disappears after a few hours' maceration. M. Laennec is very doubtful whether this redness ever gives rise to any general symptoms, so constant or severe as to indicate its presence. For our parts, we have no doubt on the subject. Like him we have found it in bodies dead of different affections, and without any symptom, during life, that could lead to a suspicion of its existence.

M. Laennec has seen the violet hue of the membrane in subjects dead of putrid fevers, emphysema of the lungs, and diseases of the heart. All these individuals had remained long in a moribund state, with suffocation. In all, the blood was very fluid, evidently altered, with signs of premature decomposition in the body. Accordingly, we more frequently observe this phenomenon in summer than in winter. Both kinds of redness—especially the violet, are accompanied by more or less softening of the heart, and an increased humidity of the arterial tunics—the consequence, most probably, of putrefaction.

Upon the whole, we may safely conclude that this tincture of the internal surface of arteries is owing either to some morbid change in the blood itself, or, at all events, to some process which takes place in articulo mortis, or post mortem. A remarkable instance lately occurred in St. George's Hospital, in the case of a man who died of phlebitis. The whole arterial system was tinged.

From the Medico-Chirurgical Review.

PRIZE ESSAY AND DISCUSSION ON TUBERCLES.

The Royal Academy of Medicine offered last year a prize for the best dissertation on the subject of tubercles, and, at a late sitting, M. Rullier read a report of the commission appointed to examine the candidate essays. The motto of the first essay was "cujusvis est hominis errare." The author passes in review the clashing opinions entertained by pathologists as to the origin of tubercles. Are these bodies (as some represent them) accidental tissues developed in certain parts by a kind of anomaly of nutrition—or are they the product of a morbid secretion, a species of concrete pus disposed in the areolæ of parts? The author cannot tell. Another, and perhaps a more interesting question is, how are these bodies resolved? The author thinks there are three modes employed by Nature—softening, atrophy, and resorption. Messrs. Thenard and Dulong having found in tubercles the same salts, and in the same proportion, as in bones (phosphate and carbonate of lime) the author attributes the formation of these bodies to a deviation of the above salts from the bones. He strengthens this hypothesis by the fact of the greater lightness of the bones of tuberculous subjects, and the exuberant proportion of phosphate of lime in the milk of cows affected

with tubercles. The commission attaches no great importance to this theory. After alluding to the fact, that these bodies are found in the fœtus, he observes that hitherto they have been discovered only in the mammiferous animals and in birds. In the first class, they are seen almost exclusively in the herbivoræ. It is certain that tubercles have never been detected in dogs. In respect to the EFFECTS of tubercles in the organs where they exist, it appears that these effects are nearly null till the tubercles begin to soften. Then the circumjacent parts inflame, ulcerate, and form accidental tissues destined, he thinks, to isolate and envelope them. As to the primitive seat of these bodies, the author concludes that it is neither in the lymphatic system, nor in the mucous follicles, but in the cellular tissue. Tubercles in the lungs, according to the author, are the sole cause of phthisis, notwithstanding what Bayle and others have said to the contrary. The commission think this assertion is too absolute, and admit the existence of cancerous, calculous, melanic, and even *osseous* phthisis. The commission, also, blames the author for having attributed too much influence to pulmonic inflammation, in the production of tubercles. They think that these bodies exist before the phlegmasia—or if they become developed afterwards, it is owing to the cachectic habit of body produced by the preceding inflammation. The commission ridicules the assertion of Laennec, that tuberculous excavations have healed—or, in other words, that phthisis has been cured. Speaking of bronchial phthisis, where the softened tubercles have discharged themselves by fistulous openings into the œsophagus or bronchia, he notices the curious fact, and illustrates it by a preparation, that the perforation is always through one of the cartilaginous rings, and never through the intermediate membrane. He remarks that tubercles of the mucous membrane are very generally confined to the sub-diaphragmatic portion of the alimentary canal—and especially to the lower portion of ileum, where they lead to ulceration. In laryngeal phthisis, he maintains that tubercles in the larynx are the primary source of the disease—an opinion which the commission contests. They believe that ulceration is the primary condition.

In respect to tubercles in the brain, the author notes the intermission of the nervous disturbances dependent on these tubercles—a fact that is truly inexplicable. It certainly strengthens the doctrine, that a pure intermittent fever itself may depend on some lesion of structure, notwithstanding the periodical states of apyrexia. The author thinks that tubercles in the bones, a disease which has excited but little attention, are the cause of many cases of white swelling, spontaneous luxations, vertebral caries. He showed a preparation exhibiting a veritable tuberculous cavern in the spinal column. The commission passed high encomium on the Essay, but did not adjudge to it the prize. They awarded its author, however, a medal, value 500 francs.

The reading of this repart led to an animated discussion. M. Andral freely censured the doubts cast by the commission on the possibility of cicatrization in tuburculous excavations—and consequently the sanability of phthisis. Both these are proved, he observed, by symptoms, by pathological anatomy, and by analogy. Thus, a person will present all the symptoms of phthisis, with unequivocal pectoriloquism under one of the clavicles. The patient recovers, and dies of some other disease; and in the place where the pectoriloquism was heard, will be found a cavity lined, or filled, or filling up with various kinds of tissue, proving the restorative process that had been going on or completed. Analogy shows us that the excavations of diseased lymphatic glands will fill up in various ways. M. Chomel also criticised the commission on this point. They admitted the possibility of cicatrization in cases of insulated tubercles—and this was all that Laennec and others contended for. No man ever stated, that a tuberculated lung would recover after several excavations had formed. This physician adverted to the intermissions of functional disturbance in organic diseases. He conceived that, in such cases, the symptoms of functional disorder were not exclusively dependent on the structural lesion (which is permanent of course) but upon some accidental and temporary causes, which unite their influence with the organic disease. M. Rullier replied and explained, by which explanation, it appeared that he entertained nearly the same opinion as Laennec and others, respecting the cicatrization of tuberculous excavations.

The intermission of symptoms in organic diseases, however, led to some sharp controversies—but the problem was not solved by the "collective wisdom" of the Academy. On breaking the seal of the motto, the author's name was found to be M. Larcher, internal elève of the Mansion de Santé, rue Faubourgh St. Dennis.

From the Medico-Chirurgical Review.

SPINAL DISEASE.

Mr. Auchincloss, Surgeon to the Glasgow Royal Infirmary, has published a case in the first number of our Glasgow cotemporary, which he considers to be valuable, as tending to confirm the opinion first suggested by Mr. Brodie, regarding the difference in the nature and treatment of ulceration confined to the *intervertebral* substance—and ulceration affecting the *cancellous structure* of the bone. The following case is offered in illustration.

Case. "7th Sept. James Graham, by trade a gardener, aged forty-five, of rather a spare habit, though healthy, met with an accident five weeks ago, the nature of which was as follows:—While standing on a bench four feet high, with his arms extended in the act of pulling fruit from a tree, he happened to lose his balance, when, to support himself, he

caught hold of one of the branches. After swinging a few seconds, the branch broke, and he alighted perpendicularly on the ground, a height of about two and a half feet. He felt little uneasiness at the time of the fall, which occurred at three o'clock, P. M. and, accordingly, continued at his employment during the remainder of working hours. Since the following morning, he has complained of a sense of tightness around the lower part of the chest, with pain in the right hypochondrium, particularly aggravated by motion, though not in the least impeding full inspiration. Pulse 76, weak; bowels moderate; other functions natural. Was bled from the arm three different times by a medical gentleman, whose advice he requested at the time; and has had two blisters applied to the region of the liver, but without producing any good effect.

"The impression on my mind, from a very cursory examination of his ailments on first seeing him, was, that the liver, or muscles in its vicinity and about the back, had sustained some degree of straining by the fall. He was again blistered and otherwise treated as for simple injury of those parts, during the first fortnight. On one occasion, he experienced much relief from cupping near the spine on the right side, but was in no other respect benefited by the treatment.

"The symptoms of his complaint had become now much more apparent, and, on a more careful inquiry being made, were found to be connected with slight curvature of the sixth, seventh, and eighth dorsal vertebræ. The convexity of the curve was turned outwards, and he seemed to suffer but little uneasiness in the part when firmly pressed upon. The following symptoms were then noticed:—Numbness of the lower extremities, with much bodily weakness and inability to sit, for even a few minutes, in the erect posture; scanty secretion of urine, costiveness, and some swelling of the abdomen; constriction and pain around the lower part of the thorax, most acute on the right side; loss of appetite, thirst, and a weak accelerated pulse.

"On the following day, the caustic potash was applied on each side of the protuberance, but without occasioning relief at the time, or on the sloughs separating, four days after. He became daily weaker, and expired on the 21st of October, exactly eleven weeks and two days from the date of his falling from the tree. For some time previous to death, his belly was tympanitic and swollen to a great size; and he was much troubled with feelings of numbness in the left shoulder.

"*Inspection.*—The pleuræ were extensively adherent on both sides. The lungs, with the exception of the posterior part of the right, which was collapsed, exhibited their natural appearance and structure. There was an abscess, containing about five ounces of curdy-looking purulent matter, in the posterior mediastinum. This was situated in front of the sixth, seventh, and eighth dorsal vertebræ, and encroached considerably on the right side of the chest. The body of the seventh vertebra was almost wholly destroyed by ulceration; but this had proceeded much farther on the right than the left side. The bodies of the other two vertebræ were also partially absorbed. In no part, however, had the disease extended to any of the intervertebral cartilages, all of which remained in an entire state. Notwithstanding the extent of destruction, the osseous structure both of the diseased vertebræ and of those in the neighbourhood, was of its natural hardness and colour. The liver was healthy, as also the other abdominal viscera."

There are very few cases of this kind on record. Mr. Brodie has offered two, in his treatise on diseases of the joints.

"In treating of this disease, with the view of distinguishing it from a similar affection originating in the intervertebral substance, Mr. Brodie regrets that there should exist no better criterion than the following, to direct us in our judgment. In ulceration confined to the cartilage, he remarks, the patient is benefited almost immediately on the issues being made, or, at least, feels himself uniformly easier after each application of the caustic; but this does not take place in the other species, for in it issues of every sort constantly fail in affording even the slightest relief. Moreover, he supposes that the form of disease which begins in the substance of the bone, is generally rapid in its progress, being more immediately followed by suppuration than that which commences in the intervertebral substance; and that, in consequence, destruction of the contiguous vertebræ takes place to a much greater extent in the one species of disease than in the other. 'But farther than this,' says that excellent surgeon, 'nothing which I have hitherto observed enables me to point out any other circumstances, in which the symptoms of these different diseases differ.'

"It affords me much pleasure to be able thus far to bear testimony to the truth of Mr. Brodie's statements, respecting the diagnosis of these two affections. From a knowledge of the facts adduced by him, and to which I have now referred, I was enabled, in the present instance, to form an opinion as to the true nature of the disease, which was afterwards fully justified by the dissection. The case certainly affords a very striking illustration of the great rapidity of the disease, and of the utter inefficiency of caustic issues as a means of cure."

From the London Medical Gazette.

CASES OF RUPTURED URETHRA, WITH REMARKS. By H. Earle, F. R. S, &c. &c.

William Taylor, æt. 42, was admitted into St. Bartholomew's Hospital October 20th, 1826, having fallen across the edge of a door on his perinæum. Considerable bleeding took place from the urethra, and effusion into

the scrotum and perinæum opposite the bulb. He had not passed any urine for many hours. An attempt was made to pass a catheter by the dresser of the day without success, and Mr. Stanley, who was passing through the ward, was requested to see him. After some time he succeeded in passing a small elastic gum catheter into the bladder, and some water mixed with blood was drawn off. Mr. S. distinctly felt the rupture in the urethra in passing the instrument, which was directed to be left in the bladder. I saw the patient the following day, and found a tumour of the size of a large walnut rather to the left of the bulb. The scrotum was black with effused blood, but not much distended. Urine mixed with blood continued to flow through the catheter. The patient was treated on a strict antiphlogistic plan. He was largely bled from the arm, and twenty leeches were applied to the perinæum. He continued to go on favourably for some days without any increase of swelling and no appearance of effusion of urine. On the 25th the catheter slipped out, and the patient attempted to reintroduce it, which caused some return of arterial bleeding. He had suffered during the preceding night with severe rigours and fever. I introduced a large catheter without difficulty, in doing which the laceration in the urethra was distinctly felt about the bulbous part. The shivering and fever returned at night, and the patient removed the catheter, which was followed by considerable hemorrhage. On the following day I found him very ill, with frequent disposition to shiver, and the tumour in the perinæum had increased in size, and was very painful to the touch. I determined now to cut down and give exit to the effused blood and urine. A free incision was made through the tumour, and extended downwards towards the anus. The membranous part of the urethra was distinctly felt, but not opened, as the lacerated opening communicated directly with the upper part of the incision, and afforded a ready exit for the urine. The wound bled freely, and gave the patient much relief. From this time he was able to pass water without the assistance of the catheter, partly through the wound, but principally through the natural passage. The wound suppurated kindly, and speedily healed. It was necessary, for some time, to pass bougies, to counteract the effect of the contraction at the cicatrized portion of the urethra.

William Barnet, æt. 36, was admitted September 13th, 1827, into Pitcairn's ward. He stated that on the previous evening he had fallen about fifteen feet, and struck the perinæum across an iron bar. Violent hemorrhage took place from the urethra, and the scrotum and integuments became distended with blood, accompanied with severe pain. He sent for a medical man, who made many attempts to pass a catheter without success. He was bled, and leeches were applied to the part. He passed a night of great misery, and the following day was admitted into the hospital. His bladder was, at this time, sensibly felt above the pubes; no urine had passed since the accident, (sixteen hours,) nor for some hours before. His countenance was anxious, and expressive of much suffering; pulse 100, and full; perinæum and scrotum much distended, and of a dark, livid colour: there was, however, no external wound. He had made many attempts to pass water, but only voided blood. I cautiously introduced a full sized silver catheter, which passed readily down into a cavity filled with coagulum between the rectum and membranous part of the urethra. The finger introduced into the rectum readily detected the point of the catheter in this situation. This being apparent, I immediately made a free incision opposite to the bulb of the urethra, and extended it parallel to the rupture to the extent of two inches. A quantity of coagulum and fresh blood escaped, and the catheter became apparent, passing through the ruptured opening at the upper part of the bulb. I attempted to introduce an elastic gum catheter from this part into the bladder, but not readily succeeding, I desisted from any effort. The finger introduced into the wound passed into a large cavity filled with coagulum. It did not appear that any urine had been effused. The extensive extravasation of blood and the pressure of the coagula had, probably, prevented this. He was placed in a warm hip bath, which encouraged the bleeding from the wound and loosened some of the coagulum. Whilst in the bath some urine flowed through the wound. He now became very faint and was removed to bed, and the bleeding was restrained by the application of lint and cold cloths. In the evening he was much relieved, with a moist skin and soft pulse. He had taken some castor oil, and had an ounce thrown up, which acted well. Urine mixed with blood continued to dribble away. He passed a tranquil night without any return of bleeding. His pulse was small and intermitting. On the 15th he passed about half a pint of urine voluntarily through the wound, which relieved him much. On the 17th he experienced difficulty in passing his water through the wound, and the dresser endeavoured to remove a coagulum which presented itself. This was followed by a return of arterial bleeding, which continued to flow through the greater part of the night, until the patient was alarmingly faint, requiring the administration of brandy and ammonia with opium. On the 18th no urine had passed, but the bladder was not distended. He continued very faint, with a feeble intermitting pulse. On raising him upon a night chair, he was able to pass water through the wound. Suppuration now began to take place, and no farther alarming symptoms occurred. His pulse continued to intermit for a considerable time, the swelling of the scrotum subsided, and urine passed freely through the wound. October 2d, I introduced a good sized metallic bougie, No. 12. On reaching the situation of the wound it met with some resistance, which

was readily overcome, and the instrument passed on without difficulty into the bladder. On withdrawing the bougie, the patient passed some water through the natural passage. I introduced the bougie every second day. The wound in the perinæum now rapidly healed, and was closed by the 8th of October. The cicatrix had however so great a disposition to contract, that it was necessary for a considerable time to pass the bougie every second day.

The preceding cases afford a good illustration of the best method of treating these serious accidents, which are sometimes followed by the most disastrous consequences from the effusion of urine, without the most prompt and decided treatment on the part of the surgeon. I have seen several of these cases, varying in extent and in the degree of danger, and, from an attentive review of all the circumstances attending them, I do not hesitate to state, that, where there is reason to apprehend that the urethra has given way, either by ulceration or from the application of force, the most judicious plan is to make a free opening in the perinæum, by which we at once secure a ready exit for the urine, blood, and matter, and prevent any extension of the mischief. This is far better than to persevere in endeavouring to introduce instruments into the bladder, by which the injury is often much increased, while the attempts prove abortive; and even should they succeed, it frequently happens that the presence of the foreign body in the urethra keeps up the irritation and increases the malady. In many of these cases where there is no external wound, and where the patient is ignorant of the nature of the injury, and the danger to be apprehended, it is often difficult to persuade him or his friends of the necessity of such an operation. Much decision and firmness are required on the part of the surgeon, who should act at once, or he may be too late to prevent extensive or even fatal effusion of urine. No possible danger is to be apprehended from the performance of the operation, which places the patient in a state of security, and enables nature to set about her process of reparation. The wounds always heal readily if properly treated, and the external incision be of sufficient extent.

In looking back to the circumstances of the two cases which have been above related, we find that, in the first case, although a catheter was successfully introduced, and the water drawn off through it, yet it became necessary to operate after the lapse of several days, in consequence of the constitutional disturbance excited by the presence of the catheter, and commencing suppuration in the seat of the effused blood at the rupture in the urethra. Upon giving exit to these, the urine flowed without difficulty through the natural passage, and the hemorrhage from the urethra ceased altogether. I have no doubt that in this case the relief would have been more speedy, and the patient would have recovered sooner, if an incision had been made immediately after the receipt of the injury. In the second case, I have every reason to believe that the effusion between the urethra and rectum was much increased by the repeated attempts to pass catheters. The presence of so much coagulum kept up an hemorrhagic action in the artery of the bulb which had nearly proved fatal. The successful issue of the case depended, I am convinced, on the free incision which was made early, and the abstaining from all attempts to pass instruments until the breach in the urethra was nearly repaired. The surgeon has two things to learn; when to act, and when to be a passive observer of nature's processes. In the present case, when he has secured a free exit for the urine, he should refrain from any farther interference until the natural efforts at reparation have nearly come to a stand. He is then called upon cautiously to restore the natural passage, and obviate the contraction which would follow the complete cicatrization of the wound.

From the London Medical Repository and Review.

OUGHT THE PERINÆUM TO BE SUPPORTED WHEN THE HEAD OF THE CHILD IS PASSING THROUGH THE OS EXTERNUM? By Chirurgus.

Having noticed a suggestion in the last number of the Repository, respecting the treatment of lacerated perinæum, I am induced to propose the question to the profession, whether or not it be proper to interfere at all with the perinæum, or with the head of the child in its passage through the os externum in cases of natural labour? Some will perhaps think that I am only displaying my ignorance in putting so simple a question, or, indeed, in endeavouring to raise a question at all about a subject which hardly any one doubts. But to clear myself from the imputation of professional ignorance, I beg to state, that I have attended several hundreds of cases of natural labour without ever meeting with one of laceration of the perinæum, though I make it a point never to support the perinæum, or to keep back the head of the child in its passage through the external orifice. Whether I may attribute this success to chance, or to my mode of practice, I do not pretend to say; but I have reason to believe that more harm than good is likely to result from interfering with the labour at this stage. Teachers of midwifery have not yet agreed amongst themselves about the manner in which the perinæum ought to be supported. Some of them recommend the head to be kept back with the hand, until the external orifice shall have had time to dilate gradually to a sufficient extent to allow the child to pass without incurring a risk of having the perinæum lacerated; and not to supply any pressure against the perinæum itself. This, perhaps, is the only method likely to prove beneficial in guarding against a rupture of the perinæum; but in acting thus, do we not incur a risk of producing a lacera-

tion of the *uterus?* We know that the uterus acts usually with very great force when the head is in this part of the passage, and any impediment, placed in the way of the descent of the child, would require that force to be increased to enable it to overcome the opposition. The uterus would be thus endangered, while the risk of rupturing the perinæum would be but little, if in any degree, diminished.

Others recommend the perinæum itself to be supported, by pressing against it either with the naked hand, or with the hand interposed by a napkin. It is quite clear that this mode of proceeding can render no service whatever in guarding the perinæum against an accident; for, whatever force we apply to this part, the labia, in being pushed out by the head father than would be necessary if the perinæum were allowed to project, would be more likely to separate at their lower junction, than if the passage were allowed to yield a little in all directions. Moreover, the perinæum, when the pressure is employed in this way, is not unlikely to be bruised between the head of the child and the hand of the accoucheur.

A third mode of supporting the perinæum is that of grasping it between the thumb and four fingers of the right hand, or of squeezing both sides towards the middle. This method is liable to the same objection as that of keeping the head of the child back, because the passage will, by this means, be rendered more confined, and the progress of the head impeded, requiring, therefore, a greater effort on the part of the uterus to expel its contents. The risk of laceration on the part of the uterus is in proportion to the force with which the organ contracts and to the impediment placed in the way of the head; and as a rupture of the womb would be of much worse consequence than a laceration of the perinæum, it should be considered, whether we ought to expose the organ to such a serious risk when so trifling, if any, benefit can accrue from our interference with the natural process? It should not be forgotten also that the patient is subjected to additional pain by such an interference, for unless the head be kept back until the perinæum be relaxed by the pressure of the head, we do no good, and relaxation cannot take place without pain.

From the London Medical and Physical Journal.

HYDROPHOBIA.

Proposal to employ Heated Air in Hydrophobia.

Nearly all the remedies with which we are acquainted have originated from some accident, which an observer has taken advantage of, and, by a reflective operation of the mind, has perceived to be applicable, if its effects were moderated, to the cure or alleviation of some disease or disorder of the human body. This method of reasoning, and its consequent application, is and has been productive of much good, and forms a rational ground of medical practice, even if pursued without any connexion with anatomy, physiology, or any other branch of the science of physic. But a fanciful and sort of guess application of remedies must necessarily, in general, be attended with so little benefit, and make an inroad for so much mischief, that I feel the full force of venturing the proposal of one upon such basis, and can easily foresee the ridicule which may arise from its failure. There is, however, in the instance I am contemplating, such a freedom from evil in its consequences, and the case in which I propose it is so totally out of the reach of the present aid of medicine, that it becomes in its result at most an error in fancy, while it will, if successful, be a means of preserving the lives of those who are decidedly out of the reach of medical aid. It would, therefore, be an inhuman error to hold back the present proposed remedy, merely because, in advancing it, there is only a glimpse of hope, instead of a sanguine expectation.

There is a disease which is manifestly communicated by the introduction of a powerful poison into the system. When this poison has given rise to a certain phenomenon, it is invariably productive of death. This disease, like most others, has its name from its prominent symptom, which in this instance is a dread of water, (hence the term hydrophobia.) Every remedy which has been employed here, and, I believe nearly all the articles of our long list of materia medica have been essayed, has deceived the flattering hope of the unfortunate, who has been driven to a treacherous repose upon their power. In these cases, anatomical investigation affords but little light, since the exposures of the scalpel display scarcely any two cases alike; and, although traces of inflammation are discoverable, I believe, in all the cases examined, yet its seat is so uncertain, and its indications sometimes so obscure, and, when rightly guessed at, customary remedies prove so inert, as to set at defiance the usual advantages of scientific procedure in common circumstances. Pathology of the disease there is none, and physiology affords not even a data to explain the phenomenon which gives rise to its name. It may be urged that, if this should be explained, the disease would be understood; but I conceive this is a mistaken notion; for, although the mental emotion of fear, as connected with water or any other undulating body, is the most distressing symptom to the sufferer, yet it would not appear that this dread is the cause of death. *On the contrary, this feeling subsides, I believe, as dissolution approaches.*

Without encumbering the subject further with crude observations to no useful end, it is my wish to propose, through you, to the public, that future cases of this disease may be submitted to the full influence of highly heated air, so as to produce from the skin and lungs a copious exhalation.

This treatment affords to my mind a hope of success, because, in all the more virulent and

manifestly contagious diseases, as plague, small-pox, measles, and scarlatina, there is an effort to throw off the poison by cuticular action; and, in the plague, those who get bubo and cuticular disease early do for the most part recover, and, in some instances, *spontaneous sweating has appeared to carry off the disease.*

The abuse of language is often the origin of error, but the origin of words is always in absolute truth, because it is merely the absolute and imperious application of a term to denote a fixed fact; and therefore, in attaining to the precise and exact meaning of the term in its original import, we must always acquire a knowledge of the determinate fact to which it was originally fixed as a denotement.

In the histories of nations, it appears well established that the arts and sciences rise, flourish, and decay, in a mutual conformity; and hence, where the lasting monuments of the former show the perfection to which they have been cultivated, it is at once known that the sister sciences cannot have been neglected, and the degree of excellence in the former is plainly indicative of the eminence reached by the latter. Hence the lasting monuments in art of the ancients are the powerful witnesses of their superiority in science.

Now, our terms of science, more especially of medicine, are derived from the same source as the admired remains of ancient sculpture; and the knowledge of medicine attained to by those people (the ancient Greeks,) was, in all probability, (whatever the moderns may think to the contrary,) equal to their success in the arts.

There is, derived from the Greek language, a word now rarely used by the profession, which lexicographers say means *expeller of poisons.* This word is *Alexipharmic,* and all the drugs comprehended under that term have the property of producing sweat. There would appear, therefore, some reason to believe that the ancients had a knowledge of the means of expelling poisons, and, if we have a correct application of their term to the same class of medicines which they used, it must have been by sweating; and hence an argument is raised upon their superior knowledge to the use of a sudatorium in the cure of hydrophobia.*

But not to trust to authority for what argument should enforce, it may be worth the time to inquire what would be the dictates of nature (that is the disease) to remedy this fatal and distressing evil.

The natural and evident cause of this disease is the introduction of a powerful poison into the system: the natural and evidently rational method of cure must be the expulsion of that poison, unless some medicine were known (and there is none) which possessed the property of rendering innoxious that virus. The expulsion of a poison mixed with the blood cannot, like poisons in the stomach or bowels, be removed by emetics or aperients, but must be cast off by the excretory pores of the blood-vessel system; so far the sudatorium is, in the simplicity of genuine philosophy, clearly indicated as the first point of external cure.

To moderate the leading symptom of disease, the dread of water, nothing appears more rational than to induce the powerful counter-desire thirst; and this the sudatorium, by its abstracting the fluids of the body, will tend powerfully to produce: so far the heated air would seem clearly indicated by the dictates of the disease.

I have before stated that there exists no pathology of the disease which is deserving of attention, and the leading phenomenon of the disease has not an explanation even plausible; but it does probably depend upon that concomitant morbid irritability of the body which is so peculiar to this kind of poisoning. There is, perhaps, no means of relieving an undue irritability of body, not dependent upon actual debility, so efficacious as the sudatorium: and hence it would appear also indicated by the nature of the disease itself.

Even if the disease be inflammatory, although the traces of inflammation are, I believe, scarcely sufficiently marked to account for death, the sudatorium would be highly useful, and strongly indicated, inasmuch as it is a powerful antiphlogistic remedy, especially in erratic disorder of the inflammatory kind.

In a state where impressions so trifling as, in the ordinary circumstances of life, would be unheeded, do excite so powerfully the animal frame, a rarer medium, as less powerful in conveying impressions, would be enforced by the salutary dictates of nature, in the same way as she seeks cooler air in fever, and warmth in debility. And hence it is probable that the sudatorium would not only be useful, but perhaps the most pleasant application to the feelings of the distressed in the disease.

These, sir, are the circumstances which influence me in hoping benefit from this practice; and I beg, through you, to submit them to the consideration of the profession at large, that they, with whom they may weigh powerfully as they do with me, may put the opinion to the test. The life of a private individual may pass without affording a case in point for experiment, so that to wait the experience of myself upon a subject so important to my fellows, would neither be justifiable nor humane; and this proposed remedy may as well be fairly and fully tried, as to suffer the miserable subjects of a hitherto universally fatal disease to lie, as they do, curious exhibitions in our hospitals for an unerring prognosis of death. It appears to me that the sweating should be long, frequent, and indeed carried to an extreme point. Z.

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* The name of the herb Contrayerva (or counter-poison) must have originated in its actual or supposed power, and this medicine also is a sudorific; as is also the plant Serpentaria, supposed to be efficacious against the bite of serpents.

From the London Medical Gazette.

CASE OF DISEASED ANKLE, *with some Observations on Exercise.* By A. Copland Hutchison, F.R.S., &c.

In the Medical and Physical Journal for October last, page 305, the case of a young lady, with diseased ankle, occasioned by using too great exertion at her gymnastic exercises and in dancing, is detailed by Mr. Rose, of Park-place, with so much distinctness and candour, from the very commencement to its fatal termination, that I consider the public to be indebted to him for his having thus early called their attention to a growing evil in some schools as regards an excess of bodily exercise among the rising generation.

Gymnastic exercises in this country are, at present, too indiscriminately used by young people of both sexes, and in some instances they are carried to too great an excess; for, however much we may advocate the great advantages of good air and proper exercise as necessary to a robust state of the body, particularly during the period of youth, conjoined however to a due supply of animal food,—yet every day's experience teaches us that the *degree* of exercise ought to be regulated according to the constitutional capability of the individual who is to be the subject of it.

On the other hand, I would ask the experienced physician or surgeon, what can be more unnatural, and consequently more injurious to health, than that the only exercise some young ladies are permitted to enjoy after their sedentary studies are over, should be that of walking round and round a green plot in a garden two and two like horses in a mill, and as stiff and upright, with tight laced stays, as if they were soldiers on parade, all attention to the orders of their commanding officer? This antiquated system of school discipline, with which my professional avocations have brought me in contact, is altogether wrong. It ought, and must be abandoned, for the more reasonable and wholesome plan of a well-regulated bodily exercise; at the same time we ought strictly to guard against an excess of it in weakly and delicate children.

In all cases of this nature parents should be made aware of the propriety of consulting their medical attendant, when the child is sent to school, as to the degree of exercise of which the child is capable, both as regards gymnastics and dancing; and at each holiday time the same professional inquiry ought to be made.

Why is it that we so seldom meet with distortions of the spine among young women in the lower, and so much more of it among the higher ranks in life? The exemption in the former case is, because their dress admits of a much freer exercise of the muscles that move the trunk of the body than in the latter class; and, also, because they are obliged from circumstances, and at a very early age, to move about and perform all sorts of domestic work, and by which, therefore, a greater degree of strength is given to such muscles as support the superstructure of the body. In the latter case such advantages are altogether wanting.

Again, let us but just glance at the comparative frequency of spinal disease among the male and female sex. The same cause operates here; for boys will not be restrained in their exercise after school hours, and hence it is that they are comparatively exempt from curvatures of the spine.

I shall now briefly relate the particulars of a case somewhat analogous to that detailed by Mr. Rose, as far, at least, as regards the seat and rapid march of the disease, and in which I felt great interest, for the patient was an only son.

On the 22d February last, master B. Fosset, aged 14, had been dancing at school with more than his usual spirit. The next day he walked between three and four miles, and, as far as I can learn, without any degree of lameness. On the evening of the 23d, he was teased with some degree of itching on the outer part of the left heel; 24th, a circumscribed red spot appeared precisely where the itching occurred; 26th, redness of the part increased; 27th, great pain, swelling, and inflammation; and on the 6th March, for the first time, I visited the young gentleman at Hendon. He was of a very lax and delicate fibre, and apparently of a strumous habit of body. His pulse was hectic, breathing quick; he had some cough, and his countenance was expressive of anxiety and anguish. The foot and ankle were considerably swelled, the toes drooped, and he had not any power to raise them. There was a small opening by the side of the tendo achilles and over the os calcis, through which considerable discharge issued. This was dilated with the bistoury, when, on examination with the probe, several of the bones of the foot and ankle were found to be carious.

On the 22d of March, a consultation was held at his father's house, in Mornington Place, whither the patient had been removed some days before; Sir Astley Cooper and two physicians, friends of the family, having met me. It was there decided that I should remove the leg below the knee, on the following day; Sir Astley remarking that he had seen one case do well after amputation, where there had been the same state of lungs and caries of the foot as in that before us. Forty drops of tinctura opii were administered to the patient on that evening, and the next day I removed the limb, without the loss of more than two or three ounces of blood, assisted by Mr. Chevalier and Mr. Wade; two other gentlemen being present.

On examining the state of the ankle after the removal of the limb, by forming a crucial incision of that which had been already made, I readily turned out, with my forefinger, the whole of the os calcis, in a carious state. The tendo achilles was quite detached from the bone, but at the place of its insertion it had a scabrous bony surface, as if, during life, it

had been torn from its insertion: but this cannot possibly have been the case, as it appears, by all we can learn, that he walked so very far, without any lameness, on the following day after he had exerted himself so much and so unusually in dancing. Every bone of the tarsus, as well as the ends of the tibia and fibula, were in the same state as the os calcis, and not a vestige of peristeum or cartilage remained upon any of the bones forming the ankle-joint. Such destruction of parts, in so short a period of time, never before occurred in the long course of my practice.

During the first day or two after the operation, our little patient seemed to be doing tolerably well, notwithstanding that his pulse kept up. After this, however, his pulse somewhat increased in frequency, with his cough and breathing; which last continued to oppress him greatly until the 26th March, being the fourth day after the operation, when he died, the thigh and amputated stump being free from swelling or inflammation.

Before we conclude the remarks on this case, it is but proper to mention that the treatment, before I saw the patient, and subsequently, was such as is usual under similar circumstances—namely, perfect rest, leeches to the part, evaporating lotions, and, alternately, fomentations and poultices. The medical treatment was chiefly directed to the establishment of a healthy action in the bowels and skin by the usual remedies, and the rapidity of the circulation was endeavoured to be arrested by the administration of digitalis.

From the Transactions of the Medico-Chirurgical Society of Edinburgh.

OBSERVATIONS ON THE CAUSES OF THE SOUNDS PRODUCED BY THE ACTION OF THE HEART.

By John William Turner, Professor of Surgery to the Royal College of Surgeons, &c.

If the ear be applied to the chest in the region of the heart, either directly or through the medium of the stethoscope, there are perceived, for each pulsation of the arteries, two sounds or beats following each other in immediate succession, and then a short interval is observed, during which no action or motion of the heart is perceptible; and, after this, the two consecutive sounds are again heard.

In many cases, if the hand be applied to the left side of the thorax, two succussions are felt in immediate succession, followed by an interval of rest; the succussions corresponding with the sounds described as heard by the ear. It is not, in all instances, possible to feel two distinct succussions. In many individuals one only can be felt, and in some, under certain circumstances, the pulsation of the heart cannot be discovered at all by the hand applied to the thorax. In children, the double beat or succussion can, in general, be distinctly perceived by the hand, especially if the action of the heart be unusually increased. I have often felt it in young persons after the age of puberty, particularly when the functions of the stomach have been deranged, and this derangement has been accompanied with a tendency to palpitation. In adults, the second succussion is more rarely felt; but I have not unfrequently perceived it, more particularly in individuals with small thin chests, and in those affected with dyspeptic and hypochondriacal or nervous ailments. In some instances in which the double succussion could not be perceived, when the persons examined were in the erect posture or lying on the back, it became observable by making them lie on the left side; and in all cases it has appeared to me to be rendered more distinct in this position of the body. Some individuals, in certain states, are themselves sensible of the double succussion by the sensation it produces in the chest, and which it communicates to the ear when the head is laid on the pillow.

This description of the double stroke or succussion which is felt in the region of the heart, applies to cases in which there has not appeared any reason to believe that disease of that organ existed. The double stroke occurs also in organic diseases of the heart; but I cannot recollect to have observed it more forcible or distinct in any cases of these diseases, than in cases in which there has been every reason to believe the heart to be sound.

One of the most remarkable examples of the sensation communicated to the hand by the double beat, which has fallen under my observation, was in a boy about fourteen years of age, who had just passed through the eruption of measles. He continued to labour under an affection of the chest. His pulse, however, was not quick, and was quite regular; but for each pulsation of the artery at the wrist, two distinct pulsations could be felt by the hand placed on the breast. The pulse afterwards suddenly rose to twice its former number, and the double beat of the heart could then be no longer felt. The symptoms of acute phthisis supervened, and rapidly proved fatal. On examination of the body after death, the heart was found to be sound; but there were several lymphatic glands enlarged to a considerable size, situated on the outer surface of the pericardium, near the basis of the heart and roots of the great vessels. The lungs were filled with tubercles, many of which had passed into the state of suppuration.

The two sounds and succussions communicated by the heart, have been considered and described as indicating the successive contractions of the ventricles and auricles. I have long felt doubtful as to the accuracy of this opinion, and have become satisfied, for reasons which I shall state, that it is erroneous.

The late M. Laennec has given a very precise account of the sensations which are communicated by the action of the heart to the hand applied externally, and more particularly to the ear through the medium of the stethoscope. I shall direct my observations to this account, since it may justly be re-

garded of the greater value, that the description contained in it is given by one who was eminently distinguished for his powers and habits of minute and accurate observation; and who, from his attention having been particularly turned to the subject, and his having enjoyed most extensive opportunities of investigating it, had examined the actions of the heart in its healthy and morbid states probably much more frequently than ever has been done by any other individual.

In describing the rhythm of the pulsations of the heart in its natural condition, as ascertained by the stethoscope, M. Laennec states, "At the moment the artery strikes the finger, the ear is slightly raised by a motion of the heart synchronous with that of the artery, and accompanied by a sound somewhat dull but distinct. The synchronism does not permit us to doubt that the phenomenon is owing to the contraction of the ventricles. *Immediately after, and without any interval,* a sound, more sharp and analogous to that of a valve which is raised, the crack of a whip, or the lapping of a dog, announces the contraction of the auricles." He adds, "No motion sensible to the ear accompanies this sound; *no interval* separates it from the duller noise accompanied by the raising of the ear, that indicates the contraction of the ventricles, which it seems to limit and to interrupt suddenly." "Immediately after the systole of the auricles, there is an interval of repose, very short, but well marked; after which, the ventricles are again perceived to raise themselves with the dull sound and gradual progression which are peculiar to them: the sudden and more sonorous contraction of the auricles follows, and the heart again falls for an instant into an absolute immobility."* M. Laennec also estimates the respective duration of the different states of the heart; and, according to his observation, one-half of the period of the action of the heart is occupied by the contraction of the ventricles, a fourth by that of the auricles, and a fourth by the state of repose. When the pulse was slow and sudden, he found the interval of repose proportionally longer and more sensible than in ordinary cases. In one instance, in which the pulse beat forty times in a minute, the period of repose seemed to him to equal the time occupied by the successive contractions of the ventricles and auricles.*

The accuracy of this description of the sensations of sound and impulse communicated through the stethoscope by the action of the heart, will at once be recognised by all who have examined it in this way, and their analogy to those ascertained by the application of the hand to the chest, is very remarkable. On feeling the action of the heart with the hand, however, a distinct motion is perceived on the second of the consecutive succussions. It is generally felt as if at some distance from the surface, and situated towards the base of the heart; an impression which is described by Laennec to be occasionally communicated by the sound given through the stethoscope.† This second succussion does not usually communicate the feeling as if any thing struck the inner surface of the parietes of the thorax, especially if the individual examined be laid on the back, or placed in the erect position; but, in some instances, where the individual has been laid on the left side, or turned towards the face, I have observed a distinct impulsion against the parietes of the chest, towards the upper part of the præcordial region.

Although there can be no doubt that the sensations communicated by the actions of the heart are most accurately described by M. Laennec, yet I suspect that the explanation he has given of these sensations is incorrect. That the first of the two consecutive sounds or sensations of motion is connected with the contraction of the ventricle, is obvious, from its being synchronous with the pulse in the arteries, and also from the apex of the heart being felt, during it, to strike against the ribs. But that the second of the sensations is communicated by the contraction of the auricles, I conceive not to be proved by any thing which has been observed, and to be inconsistent with the nature of the action of the heart, as ascertained by physiologists from the inspection of that organ, in living animals.

In the circulation of the blood, as described by physiologists, this fluid is returned by the veins into the auricles of the heart: the auricles contract, so as to propel the blood into the ventricles, and immediately after this the ventricles contract, producing the stroke of the apex of the heart against the parietes of

* "Au moment où l'artère vient frapper le doigt, l'oreille est legèrement soulevée par un mouvement du cœur isochrone à celui de l'artère, et accompagné d'un bruit un peu sourd quoique distinct. L'isochronisme ne permet pas de meconnaitre que le phénomène est du à la contraction des ventricules.

"Immédiatement après, et sans aucun intervalle, un bruit plus éclatant et analogue à celui d'une soupape qui se relêve, d'un fouet, ou d'un chien qui lape, annonce la contraction des oreillettes."

"Aucun mouvement sensible à l'oreille n'accompagne ce bruit, aucun intervalle de repos ne le sépare du bruit plus sourd et accompagne de soulèvement indicateur de la contraction des ventricules qu'il semble borner et interrompre brusquement."

"Immédiatement après la systole des oreillettes, il y a un intervalle de repos très court, mais cependant bien marqué, après lequel on sent les ventricules se soulever de nouveau avec le bruit sourd et la progression graduelle que leur sont propres; suit la contraction brusque et sonore des oreillettes, et le cœur retombe encore pour un instant dans une immobilité absolue." Traité de l'Auscultation Mediate, tom. ii. p. 404 & 405.

* Traité de l'Auscultation Mediate, tom. ii. p. 407.

† Ibid. p. 395.

the thorax and the pulse in the arteries. These motions constitute the systole of the heart. Immediately after the contraction of the ventricles, the heart falls into a state of repose for a time, constituting its diastole. After the diastole, the auricles again contract, and the same series of phenomena is observed to be repeated. Now the succession of the actions of the heart, as inferred by Laennec from the sensations communicated to the ear, does not correspond with this account given of them by physiologists. According to the description I have quoted from Laennec, the contraction of the ventricles is made the first of the two consecutive motions; the contraction of the auricles is supposed to follow it instantly without any interval; and the quiescence or diastole to take place on the termination of the contraction of the auricles. On the contrary, according to the observations of preceding physiologists, the contraction of the auricle is the first of the two consecutive contractions; that of the ventricle follows it immediately, and the diastole of the heart takes place between the termination of the contraction of the ventricles and the commencement of that of the auricles.

That this description of the successive motions of the heart, and of the order in which they occur, is not given on vague grounds, may be proved by the writings of various physiologists who have investigated this subject.

Harvey, in treating of the functions of the heart, has, from the extensive series of observations which he had made, described the order of its motions with all the clearness and precision by which his work on the circulation of the blood is so pre-eminently distinguished. He states, "there are as if two motions at the same time,—one of the auricles, the other of the ventricles themselves; nor are these performed altogether simultaneously, but the motion of the auricles occurs first, and that of the *heart* follows, and the motion is seen to begin with the auricles and to proceed to the ventricles."* He also says, "It is to be noted, that what I call pulsations in the auricles and in the *heart*, are contractions; and you will distinctly see the auricles to be contracted first, and afterwards the *heart* itself."† And he afterwards states, "In the first place, the auricle contracts itself, and, in that contraction, it throws the blood contained in it into the ventricle, which being filled, the *heart* is excited immediately, braces all its nerves, contracts the ventricles, and produces the pulse in which it impels into the arteries the blood sent from the auricle."*

Senac, in treating of the motion of the heart, says, "If we appeal to the testimony of the eyes, we shall certainly see that the contractions of the venæ cavæ and the auricles; of the auricles and the ventricles; of the ventricles and great arteries, succeed each other exactly."† And in another place he states, "These contractions of the auricles are the first motions of the heart; when they contract, the ventricles are dilated, and contract themselves immediately after; that is to say, the dilatations and contractions are successive in these organs."‡

According to the description of Haller—"After the contraction of the auricles,—in warm blooded and vigorous animals, very quickly; in the cold blooded and languid, somewhat more slowly; and in warm blooded animals, sometimes with a short interval sufficiently well marked,—the contraction of the ventricles follows. It follows, I say, because I have seen this in very many experiments in the cat, the dog, the dormouse, and very easily in the chick in ovo; and because most dissectors of the preceding age habituated to the examination of living animals, bear testimony that the motion of the ventricles follows that of the auricles, and have confirmed by their experiments the alternate contraction of the auricles and ventricles."§ In

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* "Duo sunt quasi eodem tempore motus, unus auricularum, alter ipsorum ventriculorum: nec enim simul omnino fiunt: sed præcedit motus auricularum, et subsequitur *cordis*,* et motus ab auriculis incipere, et in ventriculos progredi visus est." De Motu Cordis, Lugduni Batavorum, 1737, p. 31.

† "Notandum est ubique omnes, quas voco, et in auriculis, et in corde pulsationes, contractiones esse: et plane primo contrahi auriculas videbis, et in consequentia, cor ipsum." Ibid. p. 32.

* Harvey, and also Haller, seem frequently to use the word *cor* to signify the ventricles of the heart. It is here employed in this sense.

* "Primum sese contrahit auricula et in illa contractione sanguinem contentum in ventriculum cordis conjicit, quo repleto cor sese erigit, continuo omnes nervos tendit, contrahit ventriculos, et pulsum facit, quo pulsu immissum ab auricula sanguinem continenter protrudit in arterias," &c. De Motu Cordis, Lugduni Batavorum, p. 37.

† "Si on en appelle au témoignage des yeux, on verra certainement que les contractions des veines caves et des oreillettes; des oreillettes et des ventricules; des ventricules et des grandes artères, se succedent exactement," &c. Traité de la Structure du Cœur, &c. 2de ed. à Paris, 1783, tom. ii. p. 32.

‡ "Ces mouvemens des oreillettes sont les premiers mouvemens du cœur; quand elles se contractent, les ventricules se dilatent et se resserrent ensuite; c'est à dire que les dilatations et les contractions sont successive dans ces organes;" &c. Ibid. p. 35.

§ "Post auricularum constrictionem celerrime in calido et sano animale, aliquanto lentius in frigido, et languente, et nonnunquam satis magno etiam in calidis, tempusculo interposito, sequitur ventriculorum contractio; sequitur inquam cum in plurimis experimentis ita viderim, in fele, cane, glire, facillime vero in pullo incubato; et cum plerique prioris ævi præsectores, in vivorum animalium inci-

another place he says, "It may now be understood why the auricles first, and the ventricles afterwards, are contracted;"* and, again, "A reason is required why, first, the right auricle, and, at the same time, the left are contracted, while, in the mean time, the ventricles rest relaxed; why, a little after, the auricles are relaxed, but both ventricles contract themselves; and then, in the third place, the ventricles repose relaxed, but the auricles again contract with a quick impulse?"† In describing the diastole of the heart, Haller states, "Then the same heart, after the contraction is completed, passes into that state which we denominate dilatation, remission, or the diastole," &c.‡

I shall only add the description given by M. Magendie. He has not entered at all minutely into the consideration of the order in which the motions of the heart succeed each other; but what he has said of the relation of the contraction of the auricles to that of the ventricles, is sufficiently precise. He states, "The instant when the auricle ceases to contract, is that at which the ventricle begins to act."§

So closely does the contraction of the ventricles follow that of the auricles, that it is difficult, in many cases, exactly to ascertain the termination of the one and the commencement of the other. In cold blooded animals, in the pulsation of the heart when first formed in the embryo of the chick, and in warm blooded animals, when the action of the heart exposed to view becomes languid, they can be observed distinct from one another; but in warm blooded animals, when the action of the heart is vigorous, it is difficult by the eye to distinguish any limit between the termination of the contraction of the auricle and the commencement of that of the ventricle. In these animals, so rapidly do the contractions follow each other, that Harvey has described them from their commencement in the auricles to their termination in the ventricles, as often, apparently, forming one continuous motion. "These two motions," he says, "one of the auricles the other of the ventricles, are so performed in succession, guided as if by a harmony and rhythm, that both take place together; only one motion is apparent, especially in warm blooded animals, when the parts are agitated with a quick motion."* "And if any one will attend carefully to the motion of the heart exposed in the living animal, he will see not only, as I have said, the *heart* to raise itself, and to make one motion continuous with that of the auricles, but also an undulation, and an obscure lateral inclination towards the duct of the right ventricle, and the organ to twist itself slightly, as it were, and thus to perform this action."† He compares the succession of the contractions to the motion of one wheel driven by another; to the ignition of the powder and discharge of a gun by the stroke of the flint impelled by the lock; and to the action of deglutition: in all which, he remarks, there are a number of motions, but following each other in such rapid succession, that their limits cannot be distinguished, and they appear as if they constituted one continued action.

Indeed, so difficult is it to observe the limit between the contractions of the auricles and of the ventricles, that they have been sometimes believed by diligent observers to be, to a certain extent, simultaneous or synchronous with each other. This was the opinion of Lancisi, who appears to have investigated the actions of the heart very carefully by experiment, and to have been well aware of the sources of fallacy in making observations on this subject. He observes, that, in order to see the motions of the heart as nearly as possible in their natural state, it is necessary to select large animals, such as oxen, horses, or, at least, large dogs healthy and vigorous; and to examine the heart immediately on opening them. In such animals, he says, "it may be established by experiment, that the contraction of the auricles is not performed alternately with that of the ventricles, but that the former anticipates the latter a

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sionibus innutriti, motum ventriculorum auricularum constrictionem sequi testes se offerant alternasque auricularum et ventriculorum contractiones suo experimento confirmaverint." Elementa Physiologiæ, Lausannæ, 1757, tom. i. p. 417.

* "Denique, incipit intelligi, quod continuo in quæstionem vocabimus: quare nempe priores auriculæ, et posteriores ab eo tempusculo ventriculi constringantur." Ibid. p. 497.

† "Poscitur ratio, quare prima dextra auricula, et una, eodemque tempusculo, etiam sinistra contrahatur, dum interim ventriculi laxi quiescunt; quare paulo post auriculæ laxatæ resolvantur, ambo vero ventriculi se constringant, et denuo tertio tempusculo ventriculi quidem remissi otientur, auriculæ vero denuo vivida vi se arctent." Ibid. p. 498.

‡ "Deinde, idem cor, post absolutam contractionem, in statum transit, quem dilatationem, remissionem aut diastolem dicimus." Ibid. p. 386.

§ "L'instant où l'oreillette cesse de resserrer est celui où le ventricule entre en contraction," &c. Précis Elémentaire de Physiologie, ed. 2. tom. ii. p. 290.

* "Isti duo motus, auricularum unus, alter ventriculorum ita per consecutionem fiunt, servata quasi harmonia et rhythmo, et ambo simul fiant, unicus tantum motus appareat, præsertim in calidioribus animalibus, dum illa celeri agitantur motu." De Motu Cordis, p. 37.

† "Et si quis cordis motum diligenter in viva dissectione animadverterit videbit, non solum, quod dixi, cor sese erigere, et motum unum fieri cum auriculis continuum, sed inundationem quandam, et lateralem inclinationem obscuram, secundum ductum ventriculi dextri, et quasi sese leviter contorquere et hoc opus peragere," &c. Ibid. p. 38.

little."* He divides the time occupied by the contraction, and that occupied by the relaxation of the heart, into three parts—the beginning, the middle, and the end; and thus describes the relation of the motions of the auricles and of the ventricles to each other. "The whole operation of contraction and relaxation is so performed, that the beginning of the systole of the auricles is synchronous with the end of the diastole of the ventricles; the middle of the systole of the auricles is synchronous with the beginning of the systole of the ventricles; and, finally, the end of the systole of the auricles coincides with the middle of the systole of the ventricles: and, *vice versa*, it will be found, that the end of the contraction of the ventricles corresponds with the beginning of the diastole of the auricles; the beginning of the diastole of the ventricles with the middle of the diastole of the auricles; the middle of the diastole of the ventricles with the end of the diastole of the auricles; and that the end of the diastole of the ventricles, as we have said, coincides with the beginning of the systole of the auricles."† He also states that in the chick in ovo, during the first days of incubation (from the third to the sixth day) the motions of the rudiments of the auricle of the heart can be observed to alternate with those of the rudiments of the ventricle; but that after these two parts join each other, and the heart acquires a conical form, these motions appear continuous rather than alternate; for the contractions of the whole *corculum* then begin in the auricles, and terminate in the ventricles; but we do not see them at all to follow each other.‡ This opinion of Lancisi's has been discussed by Senac and Haller, who object to it, not exactly by denying his observations, but by adducing those made on cold blooded and smaller animals, in which they say the motions of the auricles and the ventricles can be seen distinct from each other; and combat it by arguments, to my mind, not very conclusive, some of which, I may observe, were not unknown to Lancisi himself, who has endeavoured to refute them.* Senac, however, allows that it may be suspected that the last efforts of the auricles are synchronous with the first efforts of the ventricles when they contract.†

Whether the opinion of Lancisi be true or not, his observations confirm, in a remarkable manner, the fact, that the contraction of the auricles immediately precedes the contraction of the ventricles, and that the succession of these motions is so instantaneous that it is difficult to distinguish them from each other. This fact appears to me established by the other authorities I have adduced, which I have selected in preference to many others to the same purport; because the descriptions contained in them are well known to have been founded on, or verified by, the personal observations of their authors. I may add, that, in my own limited opportunities of examining the contraction of the heart in living animals, the phenomena appeared to me to correspond very exactly with the accounts which I have quoted. The contraction of the auricle appeared the first motion of the heart, and was followed so immediately by that of the ventricles, that I have found it very difficult, if not impossible, to distinguish any interval between them.

The accuracy of these statements, with regard to the order in which the contractions of the auricles and ventricles succeed each other, may frequently, I believe, be confirmed in another manner, by observation on the human body, while all the parts are in their natural state. It is very generally allowed, that, on the contraction of the auricles, a portion of the blood they contain is driven back into the venæ cavæ, and produces in these vessels a pulsation extending often to a considerable distance from the heart. This is seen in experiments on the lower animals. In the human subject, this venous pulsation is frequently distinctly observable in the jugular and subclavian veins, in certain diseases of the heart or of the lungs, in which the flow of blood through these organs is impeded; but it can also be sometimes observed at the root of the neck in individuals in whom there is no reason to suspect organic diseases of these organs, particularly in thin persons, whose veins are large and lax. In such instances I have frequently examined the motions of the artery and vein very attentively, and have remarked, first the pulsation of the vein indicating the contraction of the auricle, immediately followed by the pulse in the artery indicating the contraction in the ventricle, and then an interval marking the diastole of the heart, again followed by the successive pulsations, first in

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* "Non dubitamus asserere, in natis, atque adultis animalibus experientiâ quoque constare, ipsas auricularum contractiones non quidem vicissim cum ventriculis fieri; sed illas horum systolem parumper antevertere." De Motu Cordis et Aneurismatibus, Lugduni Batavorum, 1740, Prop. lix. p. 192.

† "Universum siquidem, et contractionis et remissionis negotium eâ lege transigitur, ut principium systoles auricularum synchronum sit, cum fine diastoles ventriculorum; medium verò systoles earundem auricularum sit synchronum cum principio systoles ventriculorum; denique, ut finis systoles auricularum metiatur medium contractionis ventriculorum; et vice versa comperiet, finem contractionis ventriculorum concurrere cum principio diastoles auricularum: principium autem diastoles ventriculorum cum medio diastoles auricularum; tandemque finem diastoles ventriculorum eodem recidere, scilicet cum principio, ut diximus, systoles auricularum. Ibid. p. 193.

‡ Ibid. Prop. xxv. p. 93.

* De Motu Cordis et Aneurismatibus, Lugduni Batavorum, Prop. lx. p. 194.

† De la Structure du Cœur, &c. tom. ii. p. 33.

the vein, and then in the artery. In one instance, in which the venous pulse was very distinct at the roots of the right jugular and subclavian veins, and in which the two consecutive succussions of the heart could be felt by the hand placed on the thorax, I repeatedly examined the succession of the phenomena, and I observed, first the vein to be dilated; then the artery immediately to beat; and then could feel the second succussion of the heart: after which there was a short interval before the vein again pulsated. Here, I conceive, was distinctly shown, first, the contraction of the auricle marked by the pulse in the vein; secondly, that of the ventricle evinced by the beat of the artery, and accompanied by the first succussion in the thorax; and, thirdly, and last, the second succussion in the thorax, observed immediately to follow the first, distinct from the contraction of the auricle, and separated from it by the contraction of the ventricle on the one hand, and the interval of repose of the heart on the other.

From all these considerations, I am led to conclude that the second consecutive sensation communicated to the ear or hand when applied to the thorax, is not occasioned by the contraction of the auricles. Indeed Laennec seems to have been, in some degree, aware that his account of its relation to the other motions of the heart is not exactly reconcilable with the descriptions of the actions of this organ given by those who had examined them by inspection; for he remarks, "this repose, after the contraction of the auricles, does not appear to have been known to Haller, or, at least, it was not regarded by him as a natural state."* Laennec conceived, indeed, that the motions of the heart could be examined more exactly by means of the stethoscope than by the opening and inspection of living animals; but he does not inform us by what process of observation or of reasoning he satisfied himself that the second of the consecutive sounds emitted during the action of the heart, is dependent on the contraction of the auricles. I suspect it must have been a somewhat hasty assumption, which was not unlikely to be made. In the action of the heart, two consecutive contractions had been seen; and, on applying the hand or ear to the thorax, two consecutive succussions or sounds were observed. As one of these sounds or succussions was found to correspond with one of the contractions, that, viz. of the ventricles, the inference would immediately, and not unnaturally, suggest itself, that the second depended on the other contraction, viz. that of the auricles; an inference which I have endeavoured to prove to be erroneous.

I am disposed, therefore, to conclude, that, in applying the ear or the hand to the thorax, the contraction of the auricles of the heart either is not evident to the senses, or is perceived continuous with the contraction of the ventricles, and that the two contractions communicate only one sensation—the first of the two consecutive sounds and succussions. The latter of these suppositions seems to me the more probable, and to be supported by the length of the period which the first succussion occupies.

It remains to be determined, on what depends the second of the sounds and succussions which takes place immediately after the contraction of the ventricles. Can it be accounted for by the impulse occasioned by the falling back on the pericardium of the relaxed heart in its diastole, after it has been elevated or moved from its place in the systole? It has long been a common opinion that the heart is not inactive during its diastole, but has a power of dilating its cavities. Some authors have attributed this power to a *vital* action of the muscular fibres of the heart, an hypothesis that does not appear tenable, or to be reconcilable with what is known respecting the structure of this organ, and the living properties of muscular fibre. Others have attributed it to a *mechanical* power of the heart—its elasticity,—by which the cavities of the ventricles, when contracted or compressed, have a tendency, they say, to expand themselves again in the same manner as a bag of caoutchouc or strong leather expands after having been compressed; or as an artery removed from the dead body recovers and retains it cylindrical form and cavity, after its parietes have been pressed together. On this supposition has been founded the hypothesis that the motion of the blood depends in part on the ventricles of the heart attracting this fluid by suction into their cavities, from the corresponding auricles. This hypothesis does not seem improbable; and such an action, if it really occurs, may perhaps contribute, in addition to the falling back of the heart, to produce the sensation communicated to the ear or the hand, which I am endeavouring to explain.

This explanation of the second succussion of the heart seems to me to correspond very exactly with several of the phenomena observed during it; for instance, with the apparent retrocession from the ear of the sensation it communicates, as described by Laennec; with the motion appearing deep in the chest, and proceeding from near the base of the heart; and with the impulse felt during it when the body is laid on the left side or on the face; and if the hypothesis of the dilatation of the heart by its elasticity, and its consequent power of suction, be true, this may be conceived to produce a sound very analogous to those to which M. Laennec has compared that emmitted by the heart,--the raising of a valve or the lapping of a dog.

In offering any conjecture with regard to the actions or motions of the heart, I am well aware of the numerous sources of fallacy to which we are exposed in attempting to judge of phenomena concealed from our view in their natural state, and in the production and modification of which a great variety of causes may concur. The very object of this essay could not fail to impress my mind with the ex-

* De l'Auscultation Mediate, tom. ii. p. 406.

istence of such difficulties, and to render me very diffident with regard to the value or correctness of any opinion I might form on the subject to which it relates. If the views I have taken be correct, it is obvious that an error pervades the otherwise valuable descriptions given by Laennec of the actions and diseases of the heart; for in all of them the second sound heard in the motion of the heart is considered and denominated the contraction of the auricles. If, as I suppose, this eminent pathologist has been mistaken in this opinion, it would afford the strongest proof of the difficulty of avoiding the causes of deception, and of the impropriety, in describing the phenomena, or in judging of the nature of diseases, of proceeding on a doubtful physiological hypothesis.

Since the foregoing Essay was read to the Society, I have perused a Thesis published by Dr. Barry, "Sur le passage du sang à travers le Cœur," in which, among the pathological propositions deduced from the experiments and reasoning contained in it, there are the two following:—"2e, Les deux sons que le cœur présente à l'ausculation sont produits par la dilatation des ses cavités, et non par leur contraction. 3e, Le premier son, qui ne correspond pas toujours à la pulsation arterielle, est le resultat de l'éxpansion des appendices, et le second de celle des ventricules." The experiments related in this Thesis, as well as those contained in Dr. Barry's previous publications, appear to me very ingenious and original; and to illustrate interesting facts respecting the state of the heart and of the blood-vessels connected with it, during the circulation, and the effects of respiration on the motion of the blood in the large venous trunks. I cannot, however, fully comprehend the author's statements and reasonings with regard to the effects produced on the motions of the heart, and on the passage of the blood through this organ by the removal of the atmospheric pressure. If I understand his meaning rightly, some of the conclusions and inferences do not appear to me to be warranted by the experiments related, or by what is known of the mechanism or functions of the organs of respiration and circulation. It is not my intention to enter into a detailed discussion of this subject; but I may remark, that even if it were allowed that the act of inspiration may have some effect in attracting the blood to the right auricle of the heart, which is directly connected with the large veins *external* to the thorax; yet I conceive a similar effect cannot be produced on the left side of the heart, because the whole of the veins connected with the left auricle are *within* the thorax, and consequently exposed equally with the heart itself to the influence of any power which has a tendency to remove the pressure of the atmosphere from the viscera contained in the cavity; so that such a power cannot have any influence in promoting the flow of blood from the pulmonary veins into the left auricle of the heart. There are facts, also, which show that there are other powers quite independent of the removal of the pressure of the atmosphere from the surface of the heart, either by respiration or by its own contraction, which are sufficient to produce the motion of the blood through the heart and blood-vessels. This seems to be proved by the circulation of the blood in the fœtus in utero; and by the cases in which the surface of the heart has been exposed to the atmosphere, and its action, and the circulation of the blood have continued. We have examples of this kind in infants, in which the heart has been protruded to the outside of the thorax, through an aperture in that cavity, and in cases in which the cavities of the chest and pericardium have been opened by injury or disease. It appears also to be proved by experiments on animals, in which, after the muscles of respiration have been paralysed by poisons, or the cavities of the thorax have been laid open, the action of the heart and the circulation have been continued by maintaining artificial respiration; as well as by cases of asphyxia in the human subject, in which, the motion of the heart and of the blood has been restored by the inflation of the lungs through the trachea: in these experiments and cases it is obvious that, instead of the pressure of the atmosphere being removed from the heart or lungs, an additional pressure is made on all the contents of the thorax, during its expansion. With regard to the explanation offered by Dr. Barry of the sounds emitted during the action of the heart, I cannot discover that it is justified by any of the facts stated in the experiments, or by the reasoning founded on them. The cause assigned for the second of the consecutive sounds appears to me liable to the same objection that I have stated to that supposed by Laennec; for the dilatation of the ventricles is synchronous with the contraction of the auricles; and I have endeavoured to show that this does not coincide with the second sound or succussion produced by the motion of the heart.

From the London Medical Gazette.

TRANSACTIONS OF THE ASSOCIATION OF FELLOWS AND LICENTIATES OF THE KING AND QUEEN'S COLLEGE OF PHYSICIANS IN IRELAND. Vol. V. Dublin. 1828.

Although the Irish association dates its origin only from the year 1816, its members have succeeded in establishing for themselves a highly respectable character with the profession at large; every successive volume of their Transactions has been received with decided approbation, and the present one, in our judgment, will not be found to depreciate the merits of its predecessors.

Mr. Ryall on Nitrate of Silver in Affections of the Eye.

The first paper is a communication from Mr. Ryall, of the National Eye Institution, on the use of nitrate of silver in certain affections of

the eye. Nitrate of silver has long been a popular remedy in several of the morbid conditions of this delicate organ; but its success having led to its almost indiscriminate application, it has been, but too frequently, productive of injurious effects in the hands of the inexperienced. Mr. Ryall, whose experience as an oculist entitles him to considerable credit, points out those conditions of the organ in which this remedy is peculiarly applicable, noticing by the way, such auxiliary means as tend to promote its efficacy. In *ulcer of the cornea*, one of the most frequent and serious terminations of ophthalmia, the nitrate of silver is a remedy of great value. When the ulceration is superficial, and the cornea is seen occupied by innumerable minute depressions, or breaches of continuity, a solution of two grains of the caustic in one ounce of distilled water will generally answer, conveying it to the part, if necessary, (as in the cases of children) in the form of injection. But for ulcers deeply penetrating the laminæ of the cornea, in addition to the collyrium, it will be requisite to apply immediately to the affected part a fine camel-hair pencil charged with as strong a solution of the nitrate as can be made, or the caustic itself, in substance, pointed like a crayon—dropping into the eye, after each application, a little oil of sweet almonds. The internal use of mercury is, in general, inadmissible in cases of this description: patients labouring under ulceration of the cornea are for the most part of delicate and debilitated constitutions, and more likely to be benefited by nutritious diet, baths, mild tonics, healthy situation, and fresh air, than by mercurial alteratives. Cases, no doubt, do occur, in which the stimulant application is contra-indicated; for instance, under circumstances of redundancy of lymph or of interlaminary effusion; here the vascular action must be diminished by local blood-letting, purgatives, and emollient fomentations; after which a pill of calomel, antimony, and opium, should be administered twice a day until the mouth be slightly affected or the symptoms recede. The practice of dropping venous tincture of opium into the eye, in cases of ulceration of the cornea, tends greatly to aggravate the irritation, without in any degree contributing to produce healthy action of the parts. In *pustule*, or aphthous affection of the conjunctiva, generally the concomitant of a scrofulous taint, the tendency of the pustules to inflammation will be restrained, and in most cases speedily removed, by a few light touches of the stronger solution. In *sloughing of the cornea*, Mr. Ryall strongly approves of the exhibition of extract of cinchona, as recommended by Saunders: even in several instances where death of the exterior laminæ of the cornea, or of a segment of its entire thickness, had already taken place, and when the eye had presented the appearance of a disorganized mass, Mr. R. has succeeded, by a judicious use of the extract, in preserving both the shape and function of the organ, to an extent which he could hardly have anticipated. The sulphate of quinine too is a valuable auxiliary while using the nitrate of silver in cases of slough.

When ulceration has proceeded so far as to cause a collapse of the cornea and *protrusion of the iris*, the nitrate of silver is our chief, perhaps our only resource. By a few applications of the pencil-pointed caustic the happiest effects are produced; healthy action and new growth of parts are quickly obtained, the cornea resumes its convexity, the protruded iris is retracted, and unless the breach has taken place in the centre of the cornea, vision is completely restored. Material benefit is derived from the collateral aid of extract of belladonna, reduced to a cream-like consistence, and applied to the brow and exterior eyelids twice or thrice a-day. *Nebulous cornea* is accompanied by a turgid and tortuous state of the veins of the sclerotic, as well as by a profuse morbid secretion from the tarsal glands. The application of leeches to the inner surface of the lower palpebra, the exhibition of purgatives, and precaution against strong liquors and cold, are the first objects to be attended to. After this, a circle, or as large a portion of one as will embrace the opaque part of the cornea, is to be described, with the pencil-pointed caustic, on the sclerotic, at about two lines distance from its junction with the cornea. Ulceration must be kept up for some time by these means, and the solution of nitrate of silver (from two to six grains to the ounce of water) is to be frequently injected into the eye; in addition to which we should apply the ointment of the red oxide of mercury every night to the tarsi. In some of the worst cases, solution of the acetate of lead is employed with great advantage, though not with such invariable success as the solution of lunar caustic. Tonics, such as dilute sulphuric acid, and sulphate of quinine, are productive of singular benefit in this complaint; and Mr. Ryall relates a case in which the accidental injection of the dilute sulphuric acid by mistake for the caustic solution, was attended with the most unexpectedly beneficial result. In *albugo*, absorption, in the inflammatory stage, is more judiciously attempted by topical blood-letting, and alterative doses of calomel and opium, than by local stimulants; however, when the inflammation has subsided, a strong solution of the caustic will generally be found successful. The *staphyloma* of young children, which succeeds to small-pox and purulent ophthalmia, has been checked, and ultimately removed, by keeping up for some time artificial ulcers by means of the nitrate of silver. *Granular palpebræ*, another consequence of long continued inflammation, produce by friction against the cornea not only great irritation, but eventual opacity; and it is the first business of the surgeon when called to a case of protracted ophthalmia, to evert the palpebræ, particularly the superior, and he will generally at once discover the cause of irritation. It is not always necessary to have recourse to excision in these cases; the caustic simply will effect a

cure, observing after each application to wipe the parts with a sponge, and to drop into the eye some oil of almonds. Sulphate of copper will contribute very essentially to prevent the recurrence of the granulations, and to restore the healthy action of the parts. *Ectropium* may in most instances be removed by producing upon it repeated eschars with the nitrate of silver; where the surface is callous, it will be necessary previously to remove, with a knife, or curved scissors, the exuberant conjunctiva; and in general, whenever excision is employed, as in staphyloma, encanthis, pterygium, and other fleshy excrescenes of the sclerotic and cornea, the aid of an escharotic may be found necessary, as well for their ultimate destruction, as to restrain the healthy granulations of the wound. The nitrate of silver is the safest escharotic that can be employed: in many instances this caustic alone, without any previous operation, will effect their removal.

Dr. Jacob on Internal Inflammation of the Eye following Fever.

The occurrence of a local inflammation of this kind is not only of importance to ophthalmic surgery, but to pathology generally.

The peculiar inflammation which forms the subject of this paper, should not be termed iritis, as it has been by Hewson, in his slight notice of the complaint in his work on Venereal Ophthalmic—the iris is not the part which is primarily or exclusively attacked; on the contrary, all the internal parts of the eye participate in the inflammation, particularly the retina, as is proved by the most obvious symptoms. All the cases (about 70 or 80) met with by Dr. Jacob within the last year, had previously suffered from fever—some of them, certainly, as far back as seven or eight months—but there were only one or two cases in which the previous existence of fever was doubtful. It occurs more frequently in young persons than in old—in few after the age of five-and-twenty; more frequently among the poor than the rich—among females than males. In the majority of instances, it made its appearance in six weeks, or two months, after recovery from fever; and Dr. J. has not met with a single case in which both eyes were affected. A remarkable feature in the progress of this complaint, is the formation of a pink zone, encircling the margin of the cornea. This arises from the enlargement of the capillary vessels of the sclerotic at this part, admitting red blood; which vessels, in a state of health, we conclude, carry transparent blood only. The larger distinct vessels, which appear at a more advanced period, converging to the circumference of the cornea, and obscuring the white of the eye, are the branches leading to those capillaries; and as they do not ramify so extensively, or form the same reticulated arrangement as those of the conjunctiva, they afford a good means of distinguishing inflammation of the globe, or its parts, from inflammation of the conjunctiva. Another remarkable symptom is the alteration which takes place in the colour of the iris—the brilliancy of its tints are totally lost; it never, however, acquires the decidedly yellowish green observed in syphilitic iritis; neither have those globules of lymph been observed which characterize the latter form of inflammation; purulent matter, however, is occasionally secreted in the anterior chamber of the aqueous humour, constituting hypopion, or unguis. The following history of one well-marked case affords a good summary of the symptoms:—"The patient states that he recovered from fever two months ago, and returned to work at his trade as usual. About three weeks ago his sight became dim, his work confused by motes or flies floating before him, and a few days ago the eye became red and sore. He complains of pain in the eyeball, extending to the temple, and suffers from exposure to sunshine, fire, or candle. He cannot read small print, nor tell the hour by the watch. His eye feels hot, and there is a considerable discharge of tears. The sclerotic vascular, the pink zone, the cornea slightly clouded; the margin forming a whitish circle resembling the *arcus senilis*. The iris altered in colour; the pupil irregular, acting sluggishly, or nearly immoveable. The crystalline lens appears clouded, of an amber tint, and opaline appearance; and vision is permanently impaired, or totally lost, with dilated pupil, and other symptoms of perfect amaurosis." The treatment of this inflammation of the eye is not attended with much difficulty. Antiphlogistics, with opiate stupes, belladonna, and blue pill, comprise the *materiel* of the practice. Belladonna freely daubed over the lids and brow, and kept moist by a light fold of old linen wetted every ten minutes, will not only prevent closure of the pupil, and adhesion of its margin to the capsule of the lens, but will give decided relief when there is deep-seated pain extending from the eye-balls to the temple. Beer's ointment, composed of equal parts of belladonna and blue ointment—a drachm of it rubbed in upon the temple every night—is an excellent application. But the main stress of the curative treatment must be laid upon the use of mercury. "In my own practice," says Dr. Jacob, "I have found the relief from the use of mercury so certain and decisive, that I have trusted to it almost exclusively, with the assistance of the belladonna. I have generally found that two grains of calomel, with a quarter of a grain of opium, three times a day, answered every purpose; and in the majority of cases, I produced the necessary mercurial action, as marked by tenderness of the gums, in eight or ten days, by the use of three, four, or five grains of blue pill alone, three times a day; and if the pain should be severe, combining hyoscyamus, or belladonna, with the dose taken at bed-time." To the exhibition of bark, or sulphate of quinine, in this complaint, Dr. Jacob is decidedly opposed.

On Peripneumonia, by Dr. Cuming.

The next communication which we have to notice is a paper on the peripneumonia of

children, by Dr. Cuming. This complaint does not appear to have hitherto attracted all the attention which its importance demands; the only authors who have at all touched upon its investigation are, Hastings, in his treatise on inflammation of the mucous membrane of the lungs; and Cheyne, in his pathology of the mucous membrane of the larynx and trachea: the latter styles the disease in question the epidemic peripneumony of children; but both these able physicians would seem to have taken a superficial or partial view of the pathology of the complaint. They report the morbid appearances to be chiefly confined to the mucous membrane of the bronchia, whereas, in every case witnessed by Dr. Cuming, the parenchymatous as well as the mucous tissues, particularly the former, have been the seat of inflammatory action. Under these circumstances, however, we think it may reasonably be questioned whether Dr. C. be not confounding two very distinct diseases, namely, bronchitis and pneumonia, under one title. But we shall not delay our analysis in discussing the propriety of mere names. This peripneumonia occurs in children of all ages, from a few days old up to eight or nine years. The most frequent subjects of its attack, however, are children between nine months and two years. In general a trifling cough, with other slight symptoms of catarrh, precedes by a day or two the complete formation of the disease. When fully formed, the symptoms are a hurried, laborious, wheezing respiration; a frequent, short, and dry cough; and a greater or less degree of fever, with extreme restlessness, moaning, and aversion to be moved. In bad cases, the wheezing is converted into rattling; and in the course of eight or ten days from the commencement of the attack, death generally takes place by suffocation. The frequency of the respiration is stated to have amounted, in some instances, to upwards of a hundred in a minute. No disease of childhood seems to be attended with a higher degree of fever than peripneumonia. Intense heat of skin, dryness of the lips and nostrils, loaded white tongue, excessive thirst, and a pulse of from 168 to 200, have been frequently observed, in addition to restlessness and jactitation, with moaning, and starting out of sleep. Though the stomach is occasionally irritable at the beginning of the complaint, it is remarkable with what difficulty vomiting is excited towards the close. So great is the insensibility of the stomach a short time before the fatal termination, that the strongest emetics, and in the largest quantities, have been repeatedly administered without effect. The same insensibility seems to extend itself to other parts, particularly to the skin, where we often fail in exciting inflammation by the application of a blister. With regard to the duration of the disease, when an unfavourable event takes place, it is generally upon the eighth or tenth day; when the case terminates in recovery, it is seldom protracted beyond a week. Peripneumonia is more prevalent in winter and spring, than at any other season. The morbid appearance most frequently met with is an increase in the solidity of the lung, varying in degree, from that of the slightest sanguineous congestion up to complete hepatization. This increase of solidity or induration is not equally great in every part of the lung. The inferior and posterior part is in general the region affected; and it often happens that while the upper portion is in a healthy state, or merely a little more congested than natural, the inferior portion is completely hepatized. It would appear as if the morbid process, commencing in the lower part of the lung, had completed its course there, before the superior portion had advanced beyond the stage of sanguineous congestion. But although this indurated condition of the lung be the principal morbid appearance, constantly observed, yet along with this, in almost every case, is combined more or less of inflammation of the mucous membrane of the bronchia; and there is this remarkable peculiarity in the pathology of the complaint, that the more intense the latter inflammation is, and the more considerable the consequent effusion into the bronchia, the less in general is the induration of the lung, and *vice versa*. With respect to treatment,—in order to arrest the inflammatory process before it has gone the length of effusion, the most powerful remedy is blood-letting. "It is as great a mistake," says Dr. Cuming, "to suppose that children do not bear bleeding well, as that they are not liable to disease which require it. Where no peculiar delicacy of constitution was manifest, I have found children to bear blood-letting as well as adults; and I can speak from pretty extensive experience when I say, that there is no disease which more imperatively demands the employment of the lancet than the pulmonary affection in question. And the earlier it is employed, the less occasion in general will there be for its repetition. The quantity of blood to be withdrawn must depend upon the age and constitution of the patient, the violence of the disease, and the impression that may have been made by the previous treatment of the symptoms. From two to three ounces in an infant between six and twenty months, will be sufficient. In an infant under six months, though general blood-letting be required, the application of three or four leeches to the back of the hand or foot will for the most part answer the purpose, where a vein, which is frequently the case, cannot be found. Dr. C. is of opinion that leeches applied to the extremities are nearly as efficacious in removing local inflammation in infants, as when applied in the vicinity of the part affected. They seem to produce the effect of a general blood-letting, and syncope not unfrequently takes place. Sometimes a state of nervous agitation and general commotion is induced, which if not speedily removed, may terminate in death. The best remedies in cases of this kind are the horizontal position, cool air, and a drop or two of the tincture of opium. It is in the first stage of the disease, or that which elapses previous to the occurrence of much effusion or collapse, that benefit

is to be principally expected from purgatives, and a combination of calomel and julap is to be preferred. To a child between six and twenty months we may give a grain of calomel, with four or five of julap, and one of ginger, for a dose; and the action of the bowels may be advantageously kept up by administering a grain of ipecacuan, with one of calomel every second, third, or fourth hour, according to circumstances. Antimonial emetics too, are employed with great benefit, and the application of blisters may be practised with the best effects. Much caution, however, is necessary in the management of them: we should not allow a blister to remain on for more than three or four hours. When it is applied for a longer period, excessive general irritation is apt to be induced; and such is the delicacy of the infant skin, that the blistered parts not unfrequently become gangrenous. In cases of this kind, the death of the child has been sometimes the consequence. Though vesications may not have formed at the time the blister is removed, they generally take place after the application of the dressing. In infants of an irritable habit it will sometimes be advisable to dilute the blistering plaster with an equal quantity of the emplastrum ceræ. When in an advanced stage of the complaint the debility is considerable, and suffocation appears to be impending, our principal reliance is to be placed on the exhibition of stimulants. Carbonate of ammonia, in three or four grain doses, every third or fourth hour, is recommended; and the best vehicle in which it can be administered is the decoction of seneka. Dr. Cuming has given a judicious and satisfactory appendix of ten illustrative cases.

On open Foramen Ovale, by Dr. Crampton.

Although we cannot adopt the opinion of Portal, who thought he had reason to conclude, that cases in which the foramen ovale is open, are quite as numerous, and occur as frequently, as those in which it is shut, yet it cannot be doubted that instances of this deviation of nature are far from being rare.

Dr. Crampton gives an account of two or three which occurred in his own practice. The first of these was James Spellman, aged 18, admitted into the Hardwicke Hospital as a fever patient, on the 6th of February, 1827. The thoracic viscera appeared to suffer from inflammation; he had a severe cough, complained of pain in different parts of his chest, chiefly at the left side, expectorated blood, and was distressed in his breathing. These symptoms, however, gave way to the usual remedies, and about the 14th he was pronounced convalescent. But his interval of remission was short. He presently after, from premature exposure to cold, exhibited every symptom of acute rheumatism, with which all his joints were occupied, being excessively tumid, painful, and accompanied with a high degree of fever. In a few days the rheumatism became metastatic, the pectoral organs being again attacked, more especially the heart, in the region of which he appeared to suffer extremely. On the 27th Feb. the symptoms were, pain in the region of the heart, severe cough, with a croupy sound, much mucopurulent expectoration, and great distress in his breathing. At this time he stated that he had for years been occasionally subject to pain in the left side, but particularly after running, or any active exertion; his pulse extremely rapid, sometimes irregular, countenance pale, feet œdematous. The stethoscope indicated acute bronchitis, with hypertrophy, and disordered action in the heart, the motions of that organ being tumultuous and irregular. On the 6th of March he expired. The indications of the stethoscope were borne out by the dissection; but the circumstance which attracted most attention in examining the heart was the open condition of the foramen ovale. The septum betwen the auricles exhibited an oval depression, or attenuated space, of about one-third of an inch in diameter, guarded only by a thin membrane; but at one side it was evidently pervious and open, with a rounded and thickened edge. This membrane acted like a curtain or valve; when viewed or pressed from the left auricle, it was closed, the curtain or membrane pressing close, and overlapping the opening; viewed from the right auricular cavity, or touched with a probe, it opened, and allowed a free passage, fully as large as a goose quill, compressed so as to exhibit an elongated or oval section. The blow-pipe exhibited the same difference of a closed or open space, as it was used from the left or right side of the auricular septum. The commencement of the aorta appeared unusually narrow—that of the pulmonary artery greatly enlarged. The auricles were in a state of considerable dilitation; and the ventricles quite filled with a dense white coagulum, firmly attached to their parietes.

It is easy to understand what tumult and distress must have been felt in the heart and respiratory organs. In the history of his state of health antecedent to his feverish and inflammatory attack, he dwelt on the pain in his left side, and on the distress he experienced in his breathing on making any active exertion. An additional source of trouble must have arisen from the contracted state of the commencement of the aorta. But still it appears that such a condition of the heart is not incompatible with the continuance of life for eighteen years; and that were it not for over-exertion, mental emotion, or some sudden attack of disease, it might have continued for a longer period. From this and another case, Dr. Crampton ventures to suggest that this uncommon disposition of the heart may tend to a useful purpose, in preventing a still greater degree of aberration from the healthy state. The additional passage *to the left* heart, by diminishing congestion in the lungs of a person predisposed to consumption, might have averted the usual catastrophe; or by affording an easier return to the venous blood from the head, might have prevented an apoplectic seizure, or a paralytic attack, in a patient otherwise liable to such an occurrence. In many instances,

nature thus, by unusual and anomalous arrangements, provides against still greater evils; and what at first sight might appear to be an imperfection, is in fact a most ingenious contrivance to remedy an error of more importance. The foramen ovale was found unclosed in another patient, aged 34, who died in the Witworth Hospital, in April, 1827. The symptoms on admission were, excessive dyspnœa, or rather orthopnœa, violent palpitations, tremulous motion of the jugulars, face pale and dingy, lips and nails of a dark leaden colour, ankles œdematous. In the heart, as in Spellman's case, the valve was found to overlap and protect the aperture, so that no blood was likely to pass, unless the contracting power of one side of the heart prevailed over that of the other. There was no appearance of any such preponderance under ordinary circumstances, for *the heart was sound*, and in due proportion in all its parts; but when any impediment occurred on either side, the current might take the passage when the overlapping curtain was so easily removed. The distressing palpitations and the colour of his lips and nails, might lead one to adopt this opinion. The curtain could only be pushed aside from right to left; and the same conjecture as in Spellman's case, already advanced, might here be hazarded, that life was perhaps prolonged by this anomalous mechanism. The progress of tubercles towards suppuration and destruction of the lungs, might have been slower than if the whole force of the circulation, from the right side of the heart, had been constantly exerted on the lungs, the blood occasionally taking the devious path already described. In this way the unsound lungs (for we should have mentioned they were found tuberculated, and hepatized, with a large cavernous excavation in the left lung) were enabled to perform their functions for 34 years; nature thus, as observed before, compensating in some degree for the imperfection, by an unusual and extraordinary arrangement.

Removal of a large Tumour from the Neck, by Dr. Daly.

Bold operations of this kind have not been unfrequent of late; but we think that the circumstances of the present case may be deemed worthy of particular notice. The tumour was of the steatomatous character, and suffered to run on for 13 years. When the patient, who was a stout healthy man, 27 years of age, was seen by Dr. Daly, the appearance and situation of the tumour were as follow:—It occupied nearly the whole of the right side of the face and neck, extending from the zygomatic arch, under which it seemed imbedded, to within two inches of the clavicle, in which direction it measured in its anterior circuit eleven inches and a half. The ear was pushed up towards the temple, so that its lobe was expanded over the tumour; and the sides of the meatus externus so closely pressed together, that hearing was entirely obstructed on that side. Posteriorly it extended to the distance of five inches and a half from the lobe of the ear, and anteriorly over the upper and lower maxillæ, and to within an inch of the angle of the mouth; in this direction it measured from behind, round the most projecting part of its surface, to the sulcus in the skin, parallel to the trachea, twelve inches and a half. The surface was studded with irregular knobs; several ran in various directions over the tumour, but the external jugular was found below and behind it of its natural size. The carotid was felt beating deeply under it near the clavicle, but near the angle of the jaw it could not be ascertained whether the vessel ran through it or under it. We pass over the details of the operation, which was of a truly arduous and appalling nature. Suffice it to say, that it was completely removed, not a particle being left behind. The whole tumour weighed two pounds fourteen ounces. The blood lost during the operation was chiefly venous, and did not exceed twelve ounces. On looking into the cavity which remained, its depth appeared formidable indeed, as the clenched hand might easily be buried behind the jaw; and nothing but the pharyngeal muscles and mucous membrane prevented the fingers from passing down the œsophagus. The epiglottis was easily and distinctly felt, but the tonsil of that side was not to be found, having been either pushed deeply backwards and upwards towards the base of the skull, or what is more likely, absorbed. Under the most strict antiphlogistic regimen, the wound gradually improved, and was completely healed up by the termination of the fifth week. The man has been since constantly engaged in his usual occupations. His hearing was restored immediately after the operation, as soon as the ear had recovered its natural position: however, as several branches of the seventh pair of nerves were unavoidably divided during the operation, he may probably always labour under a partial paralysis of the right cheek. It may not be improper to remark, that the patient traced the origin of the tumour to a severe pulling of the ear, and pressure of the thumb behind the angle of the jaw; immediately after which it began to form; but it was principally during the year which preceded the operation that the tumour acquired its vast bulk.

From the Lancet.

ON THE DISEASES WHICH ARE OBSERVED IN EGYPT, AND ON THE ACTUAL STATE OF MEDICINE IN ARABIA. By Dr. Ehrenberg.*

The physicians whom Drs. Ehrenberg and Hemprich met with in their travels to Cairo, Suez, Damietta, Syria, and Arabia, only presented a glimmering of the knowledge which existed formerly in those parts; they appeared conscious of their ignorance in the presence

* Hecker's Litter. Annal. der gesammten Heilkunde; Janv. 1827, p. 1.

of the European travellers, and had no idea of the nature or treatment of diseases. The Canon of Avicenna is still their oracle. The most modern work on their art is that of David. In order to become a physician, it is necessary to make several copies of these works, and to learn them by heart. Bleeding, scarifications, application of cupping glasses, and circumcision, are the common surgical operations performed. Monks sometimes undertake amputations and castration. Dislocations are often left to themselves after unsuccessful attempts to effect their reduction; fractures are seldom united. Penetrating wounds from fire-arms are at first washed and cleaned with wine; then twenty or thirty threads, smeared with some kind of balsam, are introduced in the same manner as a seton; each day the threads are changed, and the number is gradually diminished by the subtraction of one thread at each dressing; the removal of the thread promotes the exit of pus, foreign bodies, and splinters from the wound. The patient is generally cured at the end of twelve or fifteen days, and fistulous openings seldom remain.

In inflammatory diseases the medicines employed internally, are cream of tartar, nitre, grains of succory, leaves of rosemary, tamarinds; and the means used externally are cupping glasses, and scarifications with a razor; in ophthalmia, antimony is given during the inflammatory stage, and this treatment appears to be one of the causes of the great number of blind in this country. In bilious diseases, which the Arab physicians only recognize by the yellow tint of the body, tongue, or eyes, scammony, fruits of several kinds of *terminalia* and *phyllanthus emblica* are given. Anchusa is, with them, a specific. In dropsy, scarifications and cautery are employed; drastic purges are also given, with diuretics. In diseases affecting the mucous membranes, such as catarrh, &c., small doses of ipecacuanha, sage, tea, grains of paradise, and cardamom, licovite, and sebastin (fruits of *cordia myxa*) are used. In dysentery, grains of rhus coriaria are employed. Assafœtida, and the root of the *cyperus fuscus*, with a small fruit of undetermined origin, called *mahleb, ischaemum schænanthus*, mixed with flour, are considered the best medicines for abdominal diseases.

Arabian physicians recognise, moreover,

1st—Diseases of the skin, which they treat with purgatives, emollient applications, and baths. Frictions of butter and sulphur, or verdigris, are used in the itch; pressed grapes of Corinth are employed in elephantiasis; no cure is known for leprosy; the properties of myrrh, in malignant ulcers, are not known, although it is indigenous in Arabia. The warm baths of Birket Faraun, on the Red Sea, are said to have cured several obstinate diseases.

2d—Worm diseases, in which senna and other purgatives are made use of, but without any great success.

3d—Syphilitic diseases, which are treated with sarsaparilla, and a kind of wood which comes from India, and called Chinese wood.

In diseases of the eyes, washes of dilute vinegar, zinc, vitriol, and saturnine water, and very frequently crude antimony, with the pulverised grain of the *cassia absus*, are used. When the inflammation is very violent, scarifications are resorted to. The physicians are generally druggists; they are not respected, and their art is by no means lucrative. The diseases little known to Drs. Ehrenberg and Hemprich, which they observed in Egypt, were—1st, an eruption called *hydroa æstivum Ægyptiacum*. Small miliary pustules, filled with serum, and appearing on the skin; these dry, and are followed by a fresh eruption, but not attended with any constitutional derangement, accompanied with a troublesome itching. This eruption manifests itself every year, at the overflowing of the Nile, among the Franks, Turks, and Arabs, whilst the Nubians, Dongolians, and Negroes are free from it. In children and persons who have a tender epidermis, the pustules run into each other, and are filled with pus, but they leave no marks after them. After the inundations this disease disappears.

2d—Erysipelas of the scrotum in mariners. (*Intertrigo scrotalis navium.*) The skin of the scrotum is greatly inflamed, painful, and sometimes relaxed; its whole surface secretes a puriform matter; the disease disappears on landing, but instantly returns when the patient is on ship-board. The Arabs suffer from it less than the Franks.

3d—Acute diseases of the knee joint. According to some accounts, this rheumatic affection sometimes prevails epidemically in Egypt and Arabia; in Alexandria it is supposed to be contagious; it soon manifests itself by pain in the knee, which increases on pressure; gastric fever generally comes on. The disease usually lasts but nine days, and a relapse seldom occurs.—Dr. Hemprich was affected with it in a slight degree.

4th—Rheumatic ophthalmia of Egypt is very frequent among the inhabitants. The affection of the eyes first shows itself in a slight redness of the conjunctiva, with a sense of weight on the eye; on the next day the pressure is less, but the eye cannot support the light, and the conjunctiva is completely tinged with red, and inflammatory pulse; there is very often sneezing and want of appetite; one eye is generally worse than another; sometimes one alone is affected.

On the third day, if the disease be not checked, the conjunctiva is of a varicose appearance; the edges of the lids are rather œdematous, and glued together by a viscid mucus. A flow of tears escapes when this mucus is removed by water or warm milk; the lids remain open only when they are kept separate.

In the last stage of the disease, the conjunctiva becomes spongy and swollen to such a degree that the lids cannot close. The cornea is deeply situated in the middle of this

mass, and seldom becomes affected; vision does not suffer.

In some, this disease sometimes terminates very unfavourably. The transparent cornea is sometimes affected, and vision is lost. In some the inflammation gradually disappears, the globe of the eye either wastes away, or preserves its usual size. In others, the inflammation passes to the chronic state, and becomes very obstinate; there sometimes only remains an insupportable pain at the bottom of the eye, without much alteration externally. The state of convalescence is long, when the disease has been violent; vertigo, and pain in the head, when it is bent forwards, and imperfect vision, often remain after the disappearance of the redness of the eye.

The two European travellers could not discover that the disease was contagious; and the miasmatical character, which it assumed at the time of the French expedition, appeared to be accidental. M. Ehrenberg is not aware of any symptom which distinguishes the ophthalmia of Egypt, from the common rheumatic ophthalmia; but the following difference exists in the ophthalmia of Europe, and that of Egypt: viz. that the former principally attacks the lids, whilst the globe of the eye chiefly suffers in the latter; dust, heat, putrid emanations, irritation of the eye by light reflected on planes of white sand, &c., are not, as is commonly said, the principal causes of the ophthalmia of Egypt; this complaint is produced by the changes of temperature and the state of atmosphere.

Medical and Philosophical Intelligence.

Aneurism of the Abdominal Aorta, with a cribriform condition of the Artery.—A man, æt. 58, was admitted into the Hospital Saint Antoine in October 1821; he was emaciated, wrinkled, and presented all the appearances of premature senility. Since 1814 he had been subject to attacks of gout in the feet and hands; these returned twice every year, and lasted each time about fifteen days. At the time of his entrance into the hospital, he complained of a deep-seated pain in the abdomen, increased on pressure; this region however was soft, and upon examination, no disease could be detected; the pulse was small, and the extremities cold. The pain was attributed to a metastasis of gout. At the expiration of twelve days, his condition remained unaltered; about this time, while in the act of rising, he fell into a state of syncope, and died in about an hour.

On dissection, forty hours after death, the lungs were found healthy, and the heart of its natural volume, but the parietes of the left ventricle were more than an inch in thickness, those of the right from three to four lines only. The mesentery was developed and voluminous, and coagulated blood was infiltrated into the cellular tissue composing it. This extravasation occupied the whole extent of this part of the abdomen, extending from the columns of the diaphragm to the base of the sacrum; it was removed carefully, together with the great vessels, without deranging their anatomical relations. The aorta, opened posteriorly throughout its whole length, presented, upon a level with the columns of the diaphragm, a dilatation about the size of a small hen's egg, involving the whole circumference of the vessel; the internal surface of this tumour was smooth, but was perforated by a multitude of minute foramina, so small that water poured into the artery, filtered guttatim through its parietes; it was evidently by this route that the blood had been extravasated into the cellular tissue of the mesentery. The internal coat of the aorta lined the dilatation throughout, and was smooth, polished, and altogether sound, with the exception of the perforations above mentioned; the middle coat terminated circularly and abruptly, above and below the aneurism; around the body of the latter it had entirely disappeared; the cellular investment, attenuated and adherent to the internal coat, presented like the latter, a multitude of little foramina, but was in other respects unchanged. The dilatation extended as far as the origin of the cœliac artery, which was not involved; the lumbar vertebræ and surrounding soft parts were sound.

The narrator of the preceding case, M. Vosseur, requests attention to the following circumstances. 1st, the patient presented no striking morbid symptoms which could have led to a suspicion of the disease of the aorta; 2d, the blood was progressively extravasated and infiltrated into the cellular tissue of the mesentery through the foramina in the artery, for the coagula in contact with the artery, were nearly as colourless as those situated the most remotely—but admitting this slow and progressive extravasation, how are we to account for the death of the patient?—this was owing, according to M. Vosseur, to his having attained the last stage of debility; 3d, on examining the body, no rupture of the aorta was discoverable, and it was evident that none existed.

An aneurismal tumour of a similar character was twice observed by Mr. Pott, situated in both instances upon the leg, in the course of the posterior tibial artery; it is noticed also by Boyer in his Traité des Maladies Chirurgicales, and the following passage occurs in an

article by M. Roux, in the 20th volume of the Dictionnaire de Médecine, p. 250. "There are sanguineous fungous tumours which attack exclusively, or almost exclusively, the vessels which circulate red blood; they are, it may be said, arterial or aneurismatic. The alteration commences in a large arterial trunk, or in several arteries of a moderate caliber,—these vessels swell, dilate—while their parietes undergoing some unknown disorganization, ulcerate—and are pierced by an infinite number of minute openings, presenting a cribriform appearance, and permitting the blood to escape; this fluid, which can only percolate slowly, instead of forming in the neighbouring parts a simple cavity, as in cases of aneurisms, infiltrates by degrees, penetrates into the surrounding cellular tissue and the adjacent parts, the organization of which soon disappears, and is transformed into a soft spongy tissue steeped in blood, which can only be slowly expressed." In the preceding case, the importance of the diseased vessel, and the extensive extravasation of blood, occasioned the death of the patient before this transformation of the cellular tissue had had time to take place. M. Vosseur observes, that the present is the first example of a similar disease affecting the aorta.—*Journal Général de Médecine, &c.*

Softening of the Womb.—In the last number of the *Repertoire d'Anatomie*, (tom. v. p. 32,) there is a valuable communication on softening (ramollissement) of the womb, by Dr. Luroth.—The following are the principal points alluded to in the paper:—

1. By softening, when applied to pathological anatomy, is generally understood the diminution of cohesion in organic tissues.

2. This alteration has been observed, with few exceptions only, in all the organs and tissues of the body.

3. Softening of the uterus seldom takes place but in the pregnant and puerperal states.

4. This complaint may be divided into three stages; the first, where the organ is only very flaccid, relaxed, soft, and often infiltrated with serum, but without any very remarkable alteration of structure; the second, where the uterus is very friable, and its structure altered to such a degree that its tissue presents but very weak traces of organization; and the third, in which there is a liquefaction of the part, or reduction of it, into an inorganic pulp.

5. If the softened parietes of the uterus are also thinner, the complaint may be termed atrophy of the organ.

6. The symptoms to which softening of the womb gives rise are vague and uncertain; additional cases are wanting before they can be determined with precision.

7. Softening of the uterus, and even the disposition to this alteration, may cause difficult or unnatural labour.

8. Rupture of the womb may occur with this alteration, particularly if the parietes are thin as well as softened.

9. In most cases, this affection is produced or favoured by an inflammation of the organ; it is more rarely a primitive alteration dependent on diminution of the vitality, and an anomaly in the nutritive action of the affected part.

10. The inflammation which precedes the softening has a tendency to effect a prompt disorganization, and belongs to that class which has been termed by some authors asthenic, putrid, &c.

11. Putridity of the uterus may be regarded as a kind of softening, and is generally seated in the neck of this organ.

12. Termination by resolution in putridity, as indeed in softening generally, is rare.

13. The diagnosis of these affections is difficult; an examination per vaginam, however, affords material assistance. The prognosis is always unfavourable, and the result generally fatal. No curative measures which have been devised appear to have any effect. —*Lancet.*

Iodine in Gouty Diseases.—In the July number of the Journal of Foreign Medicine, it is stated that this article had been successfully employed by M. Gendrin in the treatment of arthritic diseases; the following is a translation of the paper, mentioned as having been addressed by that gentleman to the Institut Royal.

Among obstinate maladies, gout is, beyond contradiction, one of the most severe and painful. The great variety of medicines proposed for its cure sufficiently shows this. So many attempts, as yet futile, ought to inspire the greatest caution in any one who does not wish to expose himself to the chance of uselessly increasing the catalogue, already so numerous, of antiarthritic remedies. This caution, although it should lead to doubt, should not check efforts to extend the resources of art against so formidable an affection. In this persuasion, I am going to mention a remedy which I have successfully used in treating gout, both to resolve chronic engorgements and the articular concretions which result from repeated attacks of this disease, and also to cure its paroxysms in the acute stage. This remedy is iodine, the rational and proper use of which is without the least inconvenience.*

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* M. Gendrin observes, that by many physicians, iodine is regarded as a very powerful irritant, while according to him it is much less active than the mercurial preparations. Its local action being stimulant, it should not be given when the digestive apparatus is in an irritable condition; the most immediate and constant effect which he has observed, is constipation, to such an extent as to render it important to exhibit occasionally gentle laxatives. When used in frictions it is more liable than when given internally, to induce

I first employed it externally in chronic gouty tumours, because it had before been extolled in old swellings of the joints. Its resolvent action was so rapid, that I asked myself if it did not, in these cases, act on the nature of the disease? Following this indication, I used it against acute fits of gout, both externally and inwardly. Success in a violent fit of gout in a very strong man, induced me to continue my experiments. Since that, seven patients with acute and violent gout have been completely cured by this remedy. In two only was the cure difficult. There it was necessary repeatedly to have recourse to the administration of the iodine, to prevent the paroxysms, and check their development when threatened. In all these cases, the continued use of iodine for two or three months after the complete cure of a paroxysm, has prevented its return. One patient has passed eight times when he should have had it, without its appearing. Another, five,—one, four,—and two, only three, without relapse.

Of four gouty subjects with chalky concretions and chronic engorgement of the joints, two have been quite cured for more than four years, and only employed the iodine externally, but for a considerable time. One has been cured a year; and the fourth is now under treatment.

With all these patients, its action has been seconded by a regimen nourishing and slightly tonic for chronic gout, and demulcent in the acute gout.

I do not know whether experience will continue to give as favourable results; but I make the present cases known that other practitioners may give the remedy a fair trial; and, if their experience of its utility corresponds to mine, that it might be generally adopted in the treatment of this disease.—*Journal Général de Médecine.*

Malformation of the Heart.—In a paper contained in the Journal Général de Médecine, M. Gendril has noticed in detail, the different malformation of the heart; the principal of which are the unusual communications of the cardiac cavities, by the absence of the inter-ventricular septum; the irregularity of the vascular orifices of the heart, for instance, the transposition of the aortic orifice to the right ventricle, the contraction or even obliteration of the pulmonary artery, and the substitution of an impervious trunk. From the similarity of these different malformations, M Gendril concludes,

1st. That the heart, originally, is formed of a single cavity.

2d. That afterwards this organ is divided into two cavities, an auricle and a ventricle.

3d. That, at a more advanced period, these two cavities are themselves divided each into two others, which, however, communicate for a long time after, by the imperfection of their septa. To these indisputable facts, the author submits the following opinions.

The pulmonary arteries arise at first from the aorta, by means of the arterial canal; it is only at a later period that the trunk of the pulmonary artery is formed, and opens into the heart from without inwards, by a mechanical impulse à tergo.

When the pulmonary artery opens into the ventricle, the communication between the ventricular cavities is then, for the first time, closed. The pulmonary veins open originally into the superior vena cava.

By the development of the superior part of the auricle, which is affected at the expense of the lower part of this vein, the pulmonary veins reach the auricle, and it is at this period that the formation of the auriculo-ventricular septum commences. Whatever may be the varieties of the malformation of the heart, they are nevertheless subject to certain invariable rules, dependent on the regular and constant succession of the changes which are effected in this organ.

The aorta, or pulmonary arteries, never open into the auricles; the venæ cavæ, or pulmonary veins, never open into the ventricles; neither the right auricle, nor the left ventricle, are wanting, if there be more than one cavity. The pulmonary veins never open into the ascending vena cava, nor into the aorta; the pulmonary arteries never open into the venæ cavæ.

If there be any imperfection in the inter-ventricular septum, it is always at its superior part towards the base of the heart, and never at its inferior part towards the apex. When the orifice of the pulmonary artery does not exist, or only exists imperfectly, the ductus arteriosus is never obliterated; this is also the case when the aortic orifice is not free; but, in this case, the orifice of the pulmonary artery is constantly present. When the orifice of the aorta, or that of the pulmonary artery, is completely obliterated, there always exists an opening in the inter-ventricular septum. When the pulmonary artery is imperfect, it is always on the side of its orifice, and never towards its continuity with the ductus arteriosus.

If the ductus arteriosus is obliterated at its origin, the aorta and pulmonary arteries are always perfect, and open into the same ventricle; or if they open into different ventricles, there is a communication between these cavities across the septum which separates them. —*Lancet.*

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anorexia, and a saburrhal condition, for which evacuations of the primæ viæ are necessary, as when the same phenomena follow the exhibitions of the mercurial preparations.

Whether internally or externally employed, iodine should be exhibited in small and progressively increasing doses. When the symptoms above mentioned do not make their appearance in the first ten or twelve days, or when they have been removed by an appropriate treatment, the dose of the iodine may be carried to a considerable extent, provided the patient be confined to a suitable diet, and drink copiously of any demulcent beverage.

Experiments on the Re-union or Cicatrization of Wounds of the Spinal Marrow and the Nerves. By M. P. Flourens.—In my former experiments it has been seen, that different parts of the nervous system may be completely separated from the rest of the body, and still present a certain degree of life or action, so that they are susceptible of being united to parts from which they have been separated, and recover in certain cases the full exercise of their functions. One of the hemispheres of the brain, for instance, on being divided, instantly loses its functions; after the lapse of a certain time the incision cicatrizes, and the functions of the part return. This, indeed, is the case with all the parts of the brain and spinal marrow.

The experiments of Fortana on the re-union of the nerves are well known; they have been repeated by a great number of physiologists and by myself also. I divided the eighth pair on a cock. Two months afterwards, the wound being cicatrized, I again exposed the nerve on which I had operated, and found it a little enlarged, but the ends completely united. I thought it important to ascertain whether the inferior extremity had acquired, by its union with the superior, the power of again uniting if divided, which I found, by a repetition of the experiment, that it had.

The following are the results of my experiment, which contain some points that do not appear hitherto to have been noticed:—

The ends of a nerve that has been completely divided, can again unite.

A nerve that has been divided unites, and re-union also takes place if the nerve be again divided below the points at which the experiment was originally tried.

Two different nerves may be crossed so, that the inferior extremity of the one may correspond to the inferior of the other, and *vice versa*, and in this case also union takes place.

Lastly, if the divided extremity of the eighth pair be brought in contact with a cervical nerve, union takes place.

As to the return of the functions, I have not been able accurately to determine this point in some of my experiments; the functions have, in others, not been restored.—*Ann. Sci. Nat.*

Apparent Death.—At a late meeting of the Academie Royal de Médecine, M. Bourgeois related a case of apparent death, which happened in a woman immediately after labour, and also in the infant. The former was in a state of syncope after uterine hæmorrhage. The child presented all the appearances of congenital asphyxia. The woman was 26 years of age, and had been in labour, with her first child, about twenty-four hours. Every thing was going on very favourably, when, from some sudden vexation she experienced, the pains diminished; and symptoms of internal hæmorrhage occurred. She was soon delivered of a child, which was apparently dead. She had now frequent attacks of syncope, during one of which she was convulsed, and appeared to breath her last. Such was the state of the case when M. B. arrived. Although, however, he was assured that the mother was dead, and from all appearances he believed it was the fact, he proceeded to introduce his finger into the cavity of the uterus, through a firm clot which filled the vagina. He stimulated the internal surface of the uterus, whilst he desired friction to be actively employed over the whole body. Stimulating odours were also applied to the nostrils, and cataplasms of vinegar, and water nearly boiling, to different parts of the body. In the course of fifteen minutes, a slight muscular motion was perceived in the abdomen, which was the first indication of uterine contraction. Large clots were quickly expelled, and the powers of life were evidently returning. The patient was now attacked with a paroxysm of convulsions resembling epilepsy. The functions of the various organs gradually returned, but still she remained for some time perfectly insensible. During the whole of this time, the infant had remained near a fire, wrapped in linen, and considered to be dead. By inflating the lungs and stimulating the surface of the body, it was at length restored. M. Bourgeois cautions practitioners from too hastily presuming that the vital spark is entirely extinct, after severe hæmorrhage. Patients may lie for a considerable time in a state of syncope, and yet be recoverable if proper means are employed. The case would certainly have afforded a fair opportunity of trying the transfusion of blood into the veins, as it has latterly been practised in this country.—*Lond. Med. Gaz.*

Intermittent Fever affecting only one half of the Body.—Madame B——, aged 22 years, of a sanguineous temperament and robust constitution, had always enjoyed uninterrupted health. Without any evident cause, she was attacked by rigour, followed by heat, and a cephalalgia, occupying only the left half of the cranium and face; after continuing some hours, these symptoms subsided, and a perspiration made its appearance, limited to the same side. The paroxysm returned, with increased severity, the same hour on the following day, and ran through its several stages as before. The attending physician, M. Lepalvy, was present at the third accession—after a rigour which, sitting out from the middle of the dorsal vertebræ, radiated into the left superior and inferior extremities, reaction commenced, accompanied with headach, suffusion of the left cheek, brilliant, animated and weeping eyes, the teguments of the cranium tender upon pressure, slight convulsive movements of the upper eyelid, tongue red and dry on one side, the other moist and natural. The face presented a very curious aspect, red, tense and shining on the left side, while on the other it was not changed from its natural condition. The chest sounded well throughout, but a crepitating *râle* could readily be detected on the left side, unaccompanied by cough or expectoration; the epigastric region and the abdomen were also painful on the same side. The paroxysm began at 8 o'clock, increased

till ten, when it began to diminish, and terminated by a gentle perspiration, (limited as above mentioned,) eructations, and the discharge of a rose-coloured urine, depositing a lateritious sediment. The disease yielded readily to the sulphate of quinine. Analogous cases are met with in authors; M. Duval saw a soldier at Brussels, attacked with a quartan fever, which presented a singular anomaly. The cold stage continued about two hours, and was accompanied by a violent spasmodic contraction of the muscles of one side of the body. The contraction was more sensible about the face, and gave to the patient a hideous aspect. The opposite side was attacked on the following paroxysm, and so on alternately. The *Revue Medicale* for 1814, contains the case of a man who having slept in a room recently repaired, contracted an intermittent fever, which involved only the half of the body corresponding to the wall, against which the bed had been placed. Mangold relates an instance of quartan fever, with hemiplegia, sweats, and convulsions, sometimes implicating the right, and at others, the left side. M. D'Auxiron has seen a case in which only the inferior half of the body beneath the diaphragm was attacked. *Journ. de Med.* 1766. Both Van Sweiten and Laméthrie have seen a young woman affected with catalepsy of one side alone; and Morgagni cites a case of icterus, occurring in an old man hemiplegic on the right side, the consequence of apoplexy. The icterus was limited exactly to the paralysed side. Etmuller, Paulinus, Pechlin, Plenck, Berger, and Robert, relate similar, or analogous instances.—*Journal des Progres, &c.*

Method of treating an Abdominal Tumour supposed to contain Hydatids.—A man, about 34 years of age, was recently admitted at the Hôtel Dieu, who, for the last 18 months, has complained of tumour in the situation of the liver, which increased very gradually, but at present occupies the whole of the right hypochondrium. Attentive examination showed that it is connected with the liver. It is perfectly free from pain even when pressed upon; has not produced any derangement of the healthy functions of the part, and gives rise to no other inconvenience than that of preventing the man from pursuing his usual avocations. He has had advice from many different medical men, and has tried a great variety of internal and external remedies, to no purpose. It so happens that M. Recarnier, about a year ago, treated a tumour somewhat similar to this, which proved to contain hydatids; and as the means he then employed were perfectly successful, he determined to adopt them on the present occasion. The tumour in the present instance is, however, much larger than the former one; and, although some thought they could perceive that sort of crepitation which hydatids cause when pressed against each other, yet the diagnosis is by no means very clear. However, M. Recarnier proceeded, as in the former case, to puncture the tumour with a very fine trocar, in order to ascertain the nature of its contents. The fluid which flowed out, as had been anticipated, was limpid and colourless, and did not coagulate by heat. After having extracted a small quantity of this fluid, the puncture was carefully closed and healed; and a week after, when the tumour was again distended to its former size, the caustic potash was applied, so as to form an opening into the cavity of the cyst. In the former case, this method answered admirably, as great numbers of hydatids were extracted. A sufficient quantity of water was then injected, to fill the space they had occupied, in order to avoid the introduction of the air; the external wound was dressed in the usual manner, and the patient recovered rapidly. The object in applying caustic, rather than making an opening by incision, is to produce adhesions between the cyst and parietes of the abdomen, so as to form an uninterrupted canal from the tumour to the external parts.—*Lon. Med. Gazette.*

Singular Disease of the Spleen; communicated by Dr. Westman to the Medical Society of Stockholm.—A young woman, æt. 28, had a suppression of the menses in consequence of checked perspiration, followed by colic and swelling of the epigastric region. To this state succeeded a hemorrhage from all the emunctories of the body, and when this ceased an induration was observed in the left side. Subsequently an extravasation of serum distended the cavity of the abdomen, especially about the umbilicus. The catamenia having resumed their flow, again disappeared, and were followed by a hemorrhage like that above mentioned, so profuse as to terminate the life of the patient. On dissection, the liver was found atrophied; the spleen greatly enlarged, its parenchyma, transformed into a glutinous fluid, enveloped three osseous concretions, one of which was two and a half inches in length.—*Bull. des Sciences Médicales.*

Circular Contraction of the Rectum.—Madam M., ætat. 40, of a full habit and strong constitution, had experienced, for the last three years (since the time of her accouchment,) a great difficulty on going to stool. Frequently fifteen days would elapse without an evacuation taking place; then violent pains, which the patient compared to those of labour, came on, and were followed by the expulsion of a small quantity of liquid, or solid fæcal matter. The patient was in this state when she consulted, on the 30th of August, 1827, Dr. Longueville. This gentleman, suspecting some affection of the organs contained in the pelvis, submitted them to an examination. The womb, although large, did not appear diseased; but on the finger being introduced up the rectum, it met, at the distance of two or three inches, with an obstruction which appeared like a circular contraction of the gut. Dr. L. attempted to pass the finger beyond this point, which he did with considerable difficulty, and found

that the rectum, above the stricture, was dilated, or rather distended, with fæcal matter. The daily use of injections was prescribed, and the introduction, up the rectum, of a tent covered with opium cerate. On the 11th of December following, Dr. L. again saw the patient, who confessed that she had neglected, or but imperfectly followed up the directions; two days before she had a very copious stool, since which she experienced greater pain than usual. The abdomen was swollen, and painful on pressure; frequent liquid motions, and nausea, small pulse, great anxiety, and cold extremities; these were the symptoms in addition, which presented themselves, and in two days afterwards the patient expired.

The body was examined fourteen hours after death. There was considerable effusion of a sero-purulent fluid in the abdomen; the peritoneum was thickened, and inflamed; the intestines were distended with gas, and covered with a yellowish soft, adventitious membrane. The muscular coat, and the layer of cellular membrane which unites it to the mucous tunic, was converted into a fibro-cartilaginous structure. Towards the anus there were a great number of varicose veins, and, about four inches up the gut, there was a circular contraction, scarcely admitting of the passage of a quill, and which must have considerably increased since the 30th of August. The mucous membrane in this point was healthy, but thin; the muscular coat, and the two layers of cellular membrane uniting it to the peritoneal and mucous tunics, were changed into a thick, gray, hard tissue.—*Jour. des Progres, &c.*

Melancholy, complicated with Aphonia, cured by means of the Actual Cautery.—A man, æt. 30, of a strong constitution and sanguineous temperament, was affected with deep melancholy complicated with aphonia, for the relief of which a variety of measures had been unsuccessfully adopted. Dr. Rossi ultimately determined to try the effects of the actual cautery applied upon the vertex; its action extended to the bones beneath. On the following day the condition of the patient was sensibly improved, and he was able to speak in a low tone. In proportion as suppuration was established, the intellectual faculties became more free; the improvement of the voice however did not appear to be progressive. Purgatives were employed, the posterior part of the neck was covered with blisters, frictions with ammoniacal liniment were made anteriorly, and an infusion of arnica with the addition of camphorated ether was given internally, while at the same time the patient inhaled the vapour of ammonia. After this treatment had been continued during two months, the patient recovered his health.—*Repertorio di Torino.*

Application of Plates of Lead to Wounds.—M. le Baron Yvan, head surgeon of the Hôtel Royal des Invalides, in a letter to M. Reveille Parise, gives us the result of his extensive experience on the dressing of wounds by the application of thin plates of lead. 1st. The first trials were made on large chronic ulcers, of disgusting aspect, abundant suppuration, foul bottom, callous edges, and with most a tendency to erysipelas to some distance. The first day of the application, the pain was diminished, the suppuration changed its nature, inflammation yielded, and the edges in thickening also contracted.

2d. The extremities, which were covered with thick crusts, were equally wrapped up, as in elephantiasis. Baths, poultices, styrax plasters, sulphur cerate, had all failed in removing these crusts; but by means of the lead they fell off without effort, and permitted again the cutaneous transpiration.

3d. Emboldened by this success, he did not hesitate to employ the same means with sores in a state of hospital gangrene, and with decided good effect.

In conclusion, he adds that this mode of treating ulcers offers the immense advantage of diminishing pain, resisting the tendency to erysipelas, thickening the edges, modifying suppuration, in fine, of causing solid cicatrices. —*Lon. Med. & Phys. Journal.*

Congenital Dislocation of the Femurs.—A man, seventy years of age, was affected with retention of urine, for which he was admitted into the Hôtel Dieu; the water was withdrawn, but the patient soon expired. He also appeared to have congenital dislocation of the femurs, on which account M. Dupuytren wished to examine the body with great care.

The thighs could not be separated from the body, without describing with the feet a segment of a circle; the trochanters were more closely approximated to the ilia, and much more elevated than in the natural state; the heads of the ossa femorum were situated higher, the knees carried more inwards, and the thigh shorter than usual; in fine, there was a total change of relations, and a marked difference in direction and length. From this change of the relations of the bone, it results, says M. Dupuytren, that the cavity destined by nature for the bone, either does not exist, or is more or less obliterated. From the change in length and direction, the points of insertion of some of the muscles are also changed. Some of the muscles being relaxed, others put on the stretch. The superior part of the thighs was enlarged, the trunk bent backwards, and the abdomen carried forwards; the pelvis, instead of being oblique, was nearly transverse; the buttocks soft and flabby, which must have been owning to the approximation of the insertion of the glutæi magni. Passing then to the examination of this region, it was found that the glutæus magnus was relaxed, whilst the medius was put on the stretch. The glutæus minimus was destroyed; and the pyriformis, instead of being placed obliquely, as in the natural state, was on a horizontal plane; the gemelli and quadratus were extended, the adductors shortened. All the arteries (even those of smallest caliber) was ossified. The

ligamentum teres was wanting on the right side, in the situation of the acetabulum; there was a small triangular cavity filled with adipose cellular tissue, on the left side; there was no trace whatever of this cavity on the right side; the head of the femur, which was rough, and considerably diminished in size, was situated in a superficial cavity, surrounded by a fibro-cartilaginous capsulse, which was the only impediment to the still further ascent of the bone. On the left side, on the contrary, the head of the femur was more developed than in the natural state, and situated in a deep bony cavity. The left os ilii was as thin as a piece of writing-paper, and perforated in some points.

There was great power of motion between the last lumbar vertebra and the sacrum; but, on examining this articulation, the only cause which could be discovered, was the relaxation of the cartilages.—*Lancet.*

Amputation of the hip joint; by M. Delpech.—In June 1823, a young man came to the hospital of Montpellier, with numerous fistulous openings in the thigh, some of them leading down to the bone, of which the probe detected several loose portions, and some fragments had been evacuated with the discharge. It was manifestly a case of necrosis of the femur. The repeated attacks of inflammation in different parts of the limb had given to it a degree of lardaceous density, (*densité lardacée.*) It was impossible to amputate in the course of the thigh, from the necrosis having extended so high up; but the hip joint remaining sound, it was resolved to remove the limb by its disarticulation, notwithstanding the great enlargement of the surrounding soft parts, as M. Delpech had found by experience, that such tumefactions speedily disappear when their exciting cause has been removed.

The crural artery was tied in the first place by means of a thread passed through the groove of a catheter, the point of which had been insinuated between the artery and vein. Instead, however, of making two flaps, as has been usual (one external and the other internal,) M. Delpech resolved to make only one large flap, and that on the inside: this flap he proposed bringing from within outwards, so as to make it cover the articular cavity with a thick cushion of muscle.

This plan was but incompletely executed: the inner flap was formed of the proposed length and thickness, by turning the knife at an early stage of the operation from within backwards, so as to take in the most fleshy part of the thigh. The limb was placed in a state of artificial abduction, and the capsular ligament was pierced, and then divided on the head of the bone through the half of its circumference. There was rather brisk hæmorrhage at this time, which, however, was suppressed by tying one artery. The thigh being now turned inwards, in place of cutting in a curved line nearly parallel to the upper or iliac edge of the buttock, the muscles of which would thus have been divided about their middle, and the formation of an external flap avoided, the knife was directed obliquely downwards, by which a small external flap also was made. The capsule was then divided through the rest of its circumference on the head of the bone, and the limb completely removed. Two more ligatures were necessary. The only thing remaining to be done was to promote the immediate union of the two flaps, as the patient could not probably have borne the suppuration of such an immense extent of surface. The extreme density of the inner flap rendered it very difficult to make it fold outwards, to effect which required both perseverance and some degree of force. Numerous points of interrupted suture, including the skin only, brought the edges exactly together; but the surgeon had the mortification to perceive that the line of junction crossed the external edge of the acetabulum, where the covering over the joint was not sufficiently thick. Compresses and bandages were applied, so as to keep the flap in its proper position. Next day the dressings required to be changed, in consequence of the abundance of serous discharge, by which, however, the swelling of the parts was diminished, and union by the first intention took place, except at the spot over the edge of the articular cavity above mentioned. Here a sero-sanguinolent discharge came on, followed by suppuration of a healthy character, which gradually diminished, and at the end of thirty days the cure was complete. At present this patient appears to enjoy perfect health, and even walks tolerably, by means of a wooden leg.

The second operation was performed in 1824, and precisely on the plan above mentioned, no difficulty having been experienced in forming the flap in the manner intended. The patient had suffered from an old ununited fracture at the upper part of the femur. Unfortunately he would not submit to the operation till his life had become endangered by abdominal inflammation. The operation perfectly succeeded; the adaptation of the flap to the other parts was complete, and the wound healed perfectly in 20 days, without any suppuration. The patient died eight months after, and the dissection of the stump showed the articular cavity filled with the soft parts constituting the inner surface of the flap; cellular membrane, of considerable density, formed the medium of union between the joint and the parts covering it.

The previous ligature of the artery, M. Delpech supposes necessary, on account of the little dependence which can be placed on compression for arresting the hæmorrhage. The suture he used, because he has not found it hurtful, provided the skin only be included; but what he chiefly insists upon, is the advantage of not making an external flap, because the tendons which are then involved unite less readily to the parts to which they are applied, and are much more disposed to suppurate than the muscular fibres. He regards it as of great moment to cover the cavity of the joint well with a thick envelope of soft parts;—this precaution, indeed, he regards as mainly contribu-

ting to prevent suppuration.—*London Medical Gazette.*

Large Fibrous Tumour removed from the Uterus.—A woman, of from 50 to 60 years of age, of delicate health, and rather emaciated, had complained for a long time of pains in the loins, shooting down to the fundament and thighs; she had also occasional hæmorrhage from the vagina, proceeding from a tumour of the womb, which she had had for some years. She never had been pregnant. M. Dupuytren discovered, upon examination, a large, smooth, hard, round tumour, very moveable, which, together with its size, induced him to believe that it originated from the cellular tissue immediately beneath the mucous membrane of the uterus, but he was not able to discover either through the rectum, or by the vagina, whether or not it was affixed to that organ by peduncle.

The woman being desirous of having an operation performed, was placed in the position for the operation of lithotomy: when the labia were opened the tumour was perceptible: a pair of forceps were then introduced upon the finger, and the tumour was gently drawn downwards: the patient was recommended to assist this by making efforts to evacuate the bowels, and an assistant made pressure on the hypogastrium. When fairly drawn down, M. Dupuytren gave the first pair of forceps into the hands of an assistant, (retaining their hold of the tumour,) whilst with a second pair he attempted to draw it entirely out, making pressure with his finger introduced into the anus, but the perinæum became so much distended as to make him fear that it would be ruptured. Seeing that the size of the tumour rendered this accident almost inevitable, M. Dupuytren determined to make an incision in its upper part by means of a button-pointed bistoury immediately: the efforts to draw it forth being renewed, it was entirely extracted: it was about the size of a new-born child's head, and was attached to the internal and posterior part of the neck of the uterus by a narrow stalk, which was cut with a pair of curved scissors.

A few spoonsful of blood only were lost during the operation, which the patient bore admirably. At the instant when the tumour was removed there was a discharge of a few ounces of violet-coloured blood. On inspecting the tumour, which weighed about eight ounces, it was found to be covered with a very vascular mucous membrane; on removing this, a white and dense substance presented itself; its surface was covered here and there with slight ulcerations. The hæmorrhage had doubtless proceeded from the outer and very highly vascular membrane: the white substance, when cut into, appeared perfectly analogous to the structure of the inter-vertebral substance.

Remarkable Malformation of the pupil of the right eye after a wound.—The following case is interesting, both in a surgical and physiological point of view, as a proof of the injury that may be inflicted upon the eye without loss of sight. A healthy young man wounded himself in the eye with a pointed instrument, and made an opening through the cornea, similar to the incision in the operation for cataract. A considerable quantity of blood-water escaped through the wound, and the power of vision was for the time destroyed. Upon examination, the eye was found collapsed; the aqueous humour had escaped. It was impossible to determine whether the lens had passed through the wound, or whether it was still in the interior of the globe, and separated from the adjacent parts; neither could the state of the vitreous humour be ascertained. When the supervening inflammation was reduced, and the eye could be opened, it was discovered that the margin of the iris was torn in three places, and that a portion of it was lost entirely. There were now three openings through the iris: one on each side, and one in the middle. It was now presumed, from the appearance of the eye, that the lens had escaped at the time of the accident. It was remarkable that the patient afterwards saw objects in their true position, and that he had not double vision: he saw distinctly with the injured eye when the other was closed. From the malformation of the iris, it would have been imagined that he would have seen every object tripled, and that his power of vision would have been otherwise injured, from the entrance of the rays of light through three pupils, and from their converging to a focus upon three points of the retina. Four years have now elapsed since the infliction of the injury, and although the eye is rather weaker than the other, the patient sees every object clearly and distinctly. An attempt was made to improve his weakened sight, by means of spectacles, which it was hoped would perform the duty of the lens; but their use was given up, as the patient saw objects double and triple as long as he continued to wear them.—*Grafe and Walther's Journal.*

On the Property which Sulphuric Acid possesses, of dissolving without oxidizing the simple oxidizable bodies.—Vogel, of Bayreuth, while engaged in some researches upon anhydrous sulphuric acid, observed that, when placed in contact with sulphur, it assumed a beautiful blue colour, which passed to a green or brown by the addition of a greater quantity of that substance. Water precipitated the sulphur from these combinations, and heat decomposed them. It was very probable that the sulphur was held in a state of simple solution by the acid, and the analogous examples cited by M. Magnus, no longer leave any doubt on this subject. Müller long ago observed, that tellurium, sprinkled with concentrated sulphuric acid, dissolved into a perfectly transparent fluid, of a beautiful crimson red, without any remarkable development of gas or sensible odour of sulphurous acid. When water was added, the metal was pre-

cipitated in form of a metallic powder of a deep brown, or almost black colour; it was also gradually decomposed, when permitted to absorb the humidity of the atmosphere, forming a sulphate of the oxide, with a disengagement of sulphureous gas. Selenium was dissolved in like manner; and the solution was of a very beautiful green; the addition of a small quantity of water threw down a reddish precipitate. According to Bussy, iodine is also dissolved in anhydrous sulphuric acid, communicating to it a bluish green colour. It follows, therefore, that sulphuric acid has the property not only of dissolving the compound bodies, as Berzelius has proved in relation to the metallic cyanurets, and Vogel of Munich, in relation to corrosive sublimate, but also simple bodies, such as sulphur and selenium, for the oxides of which it has no affinity, and tellurium, with the oxide of which, on the contrary, it forms a crystallizable compound. —*Annalen der Physik.*

Influence of Camphor in increasing the solubility of Corrosive Sublimate in Alcohol and Ether; by M. Karls.—At the ordinary temperature, four parts of the ether dissolve one of the sublimate, but when an equal quantity of camphor is added to the latter, three parts only are required. Augmenting the proportion of the camphor, he obtained the following result:—4 parts of ether, with 4 of camphor, dissolved 2 of the sublimate; 4 parts of ether, with 8 of camphor, dissolved 4 of the sublimate; 4 parts of ether, with 16 of camphor, dissolved 8 of the sublimate.

Three parts of alcohol will take up one of the sublimate, but by adding to the latter half its weight of camphor, one and a half part only of alcohol is required. By employing heat, 4 parts of alcohol may be made to dissolve 16 each, of the sublimate and camphor, but upon cooling, there takes place a small deposition.—*Bull. des Sciences Médicales, from the Annalen der Physik und Chemie.*

Nitrate of Soda in Dysentery.—This article had been already recommended by Dr. Velsen. (Horn's Archiv. 1819.) In the treatment of a dysentery which prevailed epidemically in 1822, it was employed with such success by M. Meyer, that it became a popular remedy. He lost only two patients out of one hundred. He has given from half an ounce to an ounce of the salt, dissolved in eight ounces of gum water, or decoction of marsh mallows. This medicine, notwithstanding its great analogy with nitre, cannot be replaced by that article; it acts as a refrigerant, purges gently, or determines to the surface. According to M. Meyer, it is applicable to the treatment of all inflammations of the alimentary canal.—*Bull. des. Scien. Méd. from Hufeland's Journal.*

Cardiac Sounds.—According to M. Barry, the two sounds which are distinguished by the aid of the stethoscope, during the action of the heart, are produced by the dilatation, and not by the contraction of the cavities of that viscus. The first, which does not always correspond with the pulsation of the arteries, arises from the dilatation of the auricles; the second, from that of the ventricles.

In cases of hypertrophy, when the contractions of the heart are most energetic, the sound instead of possessing greater force, has a much duller character, while the impulsion is stronger. On the contrary, if there be an unnatural thinness and dilatation of the parietes of the heart, the sound is more distinct, and the impulsion weaker, and thus, according to the nature of the sound, the different states of hypertrophy and *amincissement* may be detected.—*Journal Univ. des Sciences Médicales.*

On the Properties of British Opium.—The London Medical and Physical Journal for June, contains some observations, by a member of the College of Surgeons, on the superiority of British to Turkey opium. It is purer, and while its anodyne properties are quite equal, its narcotic or deleterious qualities are much weaker than those of the latter. The writer has given it to the extent of from three to six grains in the day, in a great number of cases, and recollects only two instances where it had any unpleasant effect, while in most cases it has produced decided relief from pain, without exciting the least headach, vertigo, or confusion of intellect,—effects, which he supposes to arise from its containing a larger proportion of morphine and a less proportion of narcotine than the Turkey opium. From a recent report of the French Institute, it appears that the same conclusion has been drawn respecting the opium grown in France.

On the Bitter Principle of Aloes, the Aloetic Acid of M. Braconnot; by M. Liebig.—The peculiar substance resulting from the action of nitric acid upon aloes, unites with the different bases, and forms salts which detonate upon the application of heat. M. Liebig made some experiments on this body, not long since, but they led to no satisfactory result; he has recently repeated them, and has ascertained the detonating principle to be carbazotic acid. The bitter of aloes is obtained in great quantity, by employing nitric acid of 1.25; with potass it forms a purple salt, slightly soluble, which precipitates the salts of barytes, lead, and peroxide of iron, in flocculi of a deep purple, and the nitrate of the peroxide of mercury, in flocculi of a clear red colour.

In order to analyze the salt formed by its combination with potash, M. Liebig decomposed by means of the acetate of lead, and contrary to all expectation, the weight of the precipitate was found to be less than that of the salt of potass employed. The water employed in washing had a yellow colour, and deposited minute crystals of a similar hue; these crystals treated at an elevated temperature with the sulphate of potass, furnished

carbazotate of potass, from which the carbazotic acid was separated.

When aloes is heated with nitric acid, of 1.432, as long as there is any disengagement of nitrous vapour, the liquid afterwards mixed with a little water, to separate a small quantity of the bitter principle, neutralized with potass and evaporated, a great quantity of the carbazotate of potass is obtained in beautiful crystals. The bitter principle of aloes is therefore a combination of a peculiar substance, participating the properties of resinous bodies, and carbazotic acid.—*Annales de Chimie, &c.*

Belladonna.—MM. Ranque and Limonier recommend an etherial tincture of this plant, prepared by macerating one part of the pulverised leaves in four parts of sulphuric ether; this etherial tincture is then introduced into a glass retort, with an equal quantity of distilled water, at from 45° to 68°, the ether is evaporated, and the water retains in solution the active principle of belladonna. In order to procure an extract, which shall contain the whole of this active part, it is only necessary to filter the water in order to separate the inert and insoluble resinoid substances with which it is united, and afterwards to evaporate carefully.—*Journal Général de Médecine, &c.*

M. Donné read to the *Institut Royal*, a paper relative to some peculiar effects produced by iodine and bromine upon the vegetable alkalies. When the former, contained in a small capsule, is introduced beneath a bell glass, with a grain or two of each alkali placed on small pieces of paper with elevated edges, and left at the ordinary temperature of the atmosphere for some hours, each alkali will be found to have assumed a particular colour; thus brucine and morphine will have acquired the hue of Spanish tobacco, cinchonine and strychnine a yellow colour, narcotine a deep green, and the others a clear or brownish yellow. The same result may be obtained more promptly, and colours more strongly marked, by heating the apparatus to 18° or 20° cent.

With bromine, still brighter and more beautiful colours are produced, with this difference, that morphine assumes a fine canary yellow, while brucine undergoes nearly the same change as with iodine; narcotine, on the contrary, changes to a beautiful yellow with a slight tinge of red.—*Revue Médicale.*

Effects of the Inhalation of Iodine.—M. Chevallier having been a considerable time in a laboratory filled with the vapour of iodine, was attacked immediately after his departure by violent colic pains, which yielded, after a time, to gum water and laudanum. He did not at first attribute his illness to the respiration of air charged with the vapour of iodine, but some time afterwards, having broken a flask containing eight ounces of this substance, and being engaged in collecting the iodine, and separating it from the glass with which it was mixed, he was again attacked in a similar manner.—*Journal de Chimie Médicale, &c.*

On the Cause of the Difference in the Strength of the Right and Left Arms.—M. Lecomte lately read before the Institute of France, a paper on the superiority of strength of the right over the left arm. This physician thinks the difference owing to the position of the fœtus in the womb during the latter months of pregnacy. In by far the larger number of cases, the position of the child is such, that its left shoulder, arm, and the whole of the left side, are pressed against the bones of the pelvis; from this pressure, a contraction of the blood-vessels (a kind of atrophy of the left sanguineous system) ensues. The weakness of the left side, then, arises from this congenital disposition. According to M. Lecomte, it is the right side which is the weakest, when the child is placed in the uterus in the contrary direction, which accounts for those who are left handed.—*Lancet.*

Application of Belladonna to the Cure of Tinnitus Aurium.—It is stated by Sir Gilbert Blane, in a paper recently read before the College of Physicians, that in two cases of tinnitus aurium which fell under his observation during the past winter, a cure was effected by belladonna. In the first case, which occurred in a lady rather advanced in life, the sensation was so distressing, that she requested, if it could not be removed, something might be administered "to make her sleep for ever." Belladonna was applied externally to the ear, and, after a short time, the relief was complete, and has since remained permanent. The other case was in the person of one of his Majesty's household, who compared the noise to the "rushing of winds, the roaring of cataracts, the discharge of fire-arms," and every thing that was most distracting. A third of a grain of belladonna was given internally, three times a day, and in three days the patient had entirely recovered from this distressing symptom.

Preservation of Anatomical Preparations by Oxalic Acid.—The peculiar property which sugar possesses of preserving both animal and vegetable substances, without materially impairing their colours, induced Dr. M'Donnel to make trial how far the same object might be effected by oxalic acid. A solution in pure water, in the proportion of one scruple to the ounce, he recommends as superior to any other menstruum he has hitherto tried. The muscular parts are as distinctly marked after a month's immersion as on the first day, while the solution continues perfectly limpid, unstained by any colouring matter, and no sign of putrescence or decomposition could be detected.—*Lon. Med. Gazette.*

Culture of the Cinnamon Tree.—The elevated temperature of the countries in which the cinnamon tree grows spontaneously, has induced the belief that a high degree of heat was essential to its vegetation. From a circumstance, however, recently observed by M. Boursault, it would appear to be otherwise.

This gentleman possesses in his hot-house, the most beautiful tree of the kind in France; for several years past it has borne seed, which has been sowed, and given origin to numerous plants. One day he observed in a border of his garden, a young plant, which must have been produced from a seed that had fallen from the tree into some vessel placed in its vicinity, and been subsequently thrown upon the spot where it was then growing.

This germination in open air, led to the supposition that it did not require so elevated a temperature, as its origin and mode of cultivation might seem to indicate; to test the truth of this conjecture, several plants were transported to the temperate-house, and two sprouts growing from the seed, were subsequently planted in the great *conservatoire*, where they flourished very well, in open air. During winter, a temperature is maintained in this conservatoire, barely sufficient to exclude the frost.

M. Boursault has sent plants into various countries, especially in the south of Europe, where he believes that it may ultimately be completely naturalized.—*Journal de Pharmacie, &c.*

Preservation of Hydrocyanic Acid.—A quantity of hydrocyanic acid, prepared according to the process of Ittner, having begun to assume a yellow tinge at the expiration of a month, M. Schütz rectified a part upon the calcined sulphate of zinc, and obtained a colourless acid, which he preserved during three years and a half; ten drops were sufficient to kill a large dog.—*Bull. des Scienc. Méd.*

Hydrocyanic Acid.—Dr. Elliotson reports, as the result of his further experience with this medicine, that it is highly useful when administered with medicines which have a tendency in themselves to induce nausea and sickness. For instance, when given in conjunction with colchicum, the latter will not irritate the stomach, whilst, at the same time, we have its full remedial powers. The importance of such an adjuvant we scarcely need dwell upon.—*Lancet.*

New Cinchona.—M. Gondat, professor of botany at Bogota, has recently discovered a new species of cinchona in the large forests which border upon the town of Muzo: he has designated it under the name of *Cinchona Muzonensis*. Botanical characters;—foliis ovato-oblongis, acutis, basi attenuatis, stipulis revolutis, paniculâ brachiatâ, corollis albis, limbo imberbi. Although it does not produce flowers with hairy borders, as do the best species of this genus, it may notwithstanding be employed with much advantage in medicine.—*Journal de Pharmacie, &c.*

New Publications.

A Treatise on Gout, Apoplexy, Paralysis, and Disorders of the Nervous System. By A. Rennie, Surgeon, &c.

Hints to Young Medical Officers of the Army on the Examination of Recruits, and respecting the feigned Disabilities of Soldiers; with Official Documents, and the Regulations for the Inspection of Conscripts for the French and Prussian Armies. By Henry Marshall, Surgeon to the forces. 8vo. pp. 224. Burgess and Hill, London, 1828.

This is a most useful work, and no Army medical officer ought to be without it.

A Compendium of the Diseases of the Human Eye, containing Descriptions and Explanations of the various Diseases, illustrated by Engravings, and accompanied by Practical Observations on their Treatment. By Alexander Watson, Fellow of the Royal College of Surgeons, Edinburgh, &c. &c. &c. Second edition, much enlarged. 8vo. pp. 192. Edinburgh, 1828.

A Dissertation on the Nature and Properties of the Malvern Waters, and an Inquiry into the Causes and Treatment of Scrofulous Diseases and Consumption, together with some Remarks upon the Terrestrial Radiation of Caloric upon Local Salubrity. By William Addison, Surgeon. 8vo. pp. 192. London, 1828.

The Evidences against the System of Phrenology, being tbe Subject of a Paper read at an Extraordinary Meeting of the Royal Medical Society of Edinburgh. By Thomas Stone, Esq. 8vo. pp. 109. Edinburgh, 1828.

The *Anti*-Phrenologists will read this Pamphlet with much pleasure; and the Phrenologists likewise, with some degree of interest.

Oservations on Strictures of the Rectum, and other Affections of the Intestinal Canal: including Hæmorrhoidal Tumours (called Piles,) accompanied with the Mode of Treatment by the late W. White, Esq. By Samuel White, Member of the Royal College of Surgeons, London. Fifth Edition.—8vo. pp. 110, and Plates.

First Steps to Botany, intended as popular Illustrations of the Science, leading to its study as a Branch of general Education. By James L. Drummond, M. D. Professor of Anatomy and Physiology in the Belfast Academical Institution.

In 4 vols. 8vo. The English Flora, by Sir James Smith, M. D. F. R. S. President of the Linnean Society, &c. &c.

LITERARY INTELLIGENCE.

Dr. M'Cormack, of Belfast, announces for immediate publication, an Essay on the Causes and Cure of Stammering and Impediment of Speech. Dr. M'Cormack, has, it appears, discovered a method of removing these troublesome affections in a few days, and often in a few hours.

Shortly will be published, "An Introduction to the Comparative Anatomy of the British Vertebrated Animals," with Plates. By J. F. South, Lecturer on Human and Comparative Anatomy, St. Thomas's Hospital.